Telephony.

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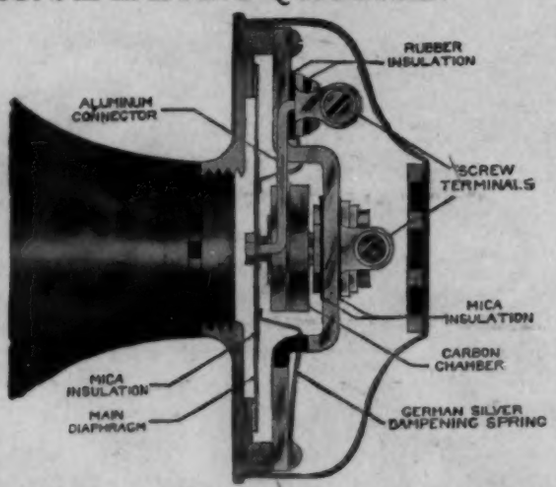

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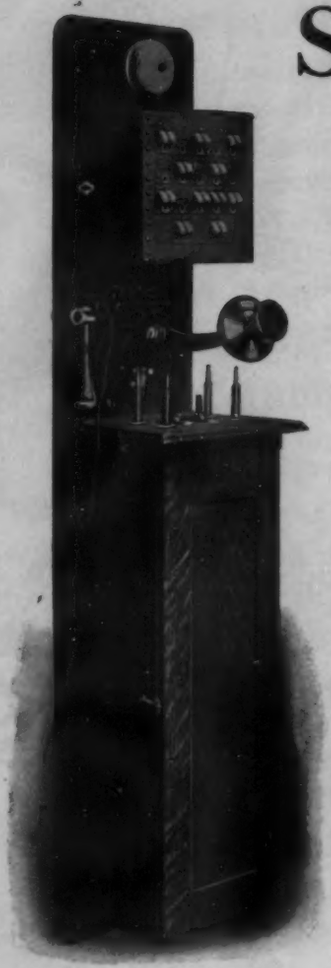
A Practical Magneto Switchboard for the Small Exchange



No. A5551—Closed View

Many times a small wall type switchboard is required where the capacity will not exceed fifteen lines. The A-5551 switchboard makes an ideal installation under these conditions.

The cabinet is strongly built of selected oak and is handsomely finished. For convenience and compactness the operator's equipment consists of our famous "Triplet Set" with standard transmitter and receiver. Two pairs of cord equipments are provided with clearing out drops and standard roller type ringing and listening keys. The line equipments consist of the plug-restoring No. 11 drop. The generator, cords and batteries are contained in the battery box. Every necessary feature of an efficient switchboard is embodied in this wall type A-5551.

Have you an immediate need for such a practical equipment? Write us today for full particulars and prices.

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Offers a Most Up-to-date Switchboard
Based solely on the record of these switchboards in service under varying conditions.

Use is the Test

If you are contemplating switchboard improvement, write us today. Our practical sales engineers, backed by our engineering faculty, are at your service.

To supply practical switching equipment to fit economically the particular condition of your own exchange is our aim.

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Manufacturers of Standard Telephones and Switchboards

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Multiple Boards

¶The Monarch multiple switchboard shown in the above illustration has been in use for six years, and its owner says it is cheaper to maintain than any other board in his system of ten exchanges. Other Monarch multiple boards have been in use for seven and eight years, and reports of service are just as satisfactory.

¶Before the first Monarch Multiple board was sold, all of the parts necessary for its construction had been on the market and in use for a number of years. Answering and multiple jacks, relays, lamp jacks, etc., had shown their reliability by actual service, so the building of the first multiple board was nothing more than the proper assembling of these standard parts. It is characteristic of the Monarch Company to make no move or expansion without first laying a solid foundation.

¶Today Monarch switchboards are built in all sizes and for all classes of service. The little farm line switching station is carefully made so as to carry with it the usual Monarch stamp of perfection. The large multiple board receives the individual attention of those who know how to build such equipments. A study of the buyer's requirements and an honest effort to fulfill them help to make Monarch boards so satisfactory that the users are enthusiastic.

¶Any company now in the market or even considering the purchase of a switchboard of any type from one line to one thousand lines in size should secure Monarch bulletins describing apparatus which exactly meets operating conditions and is more economical to maintain than any other.

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Make Haste—and Waste
(Through Mistakes)

Machines
Make Haste—Without Waste
(Their Speed is natural—accurate—unvarying)

The Automatic Telephone is a Machine

It is free from the wasteful haste of human hands, and has all a machine's advantages of speed plus accuracy and efficiency.

Furthermore, machines do not draw pay, do not need rest periods, welfare work, old age pensions, sick benefits. They never go on strike, nor become tired. They work 24 hours a day.

The Automatic Telephone is a Machine

It has Speed and Accuracy. Efficiency and Economy.

Automatic Electric Company, Chicago

No. 38

THIS switchboard is universally adapted to either magneto or common battery service. It is built in our very popular flush sided design of unit type cabinet, thereby making it possible to line up any number of boards, side by side, and have the effect of a continuous switchboard. We recommend this type for small exchange service and Private Branch Exchange purposes, where there is uncertainty as to the ultimate size of the equipment to be used. This switchboard gives all of the advantages of our celebrated No. 3 (large capacity magneto board) and has proven even more popular on account of its taking up less floor and wall space.

The No. 38 Cabinet is four feet, 3 inches high; 25⅛ inches wide; 30 inches deep over all; and has a key shelf depth of 15⅛ inches.

For Selective Party Line Service.

For magneto service, cord circuits with the regular type of Cam Lever Ringing, Listening, and Ring Back Keys are furnished. The Garford Company's Individual 4 or 8 Party Harmonic Ringing Keys can be used, thereby greatly increasing the number of subscribers which can be efficiently handled by the one operator attending the board.

As a magneto board, this cabinet will hold 100 combination Drop and Jack lines in three panels. On this basis it will also accommodate 15 Cord Circuits of the single or double clearout type; and 5 Transfer Trunks of the Jack and Lamp type. If intended to be used as a magneto board with less than 100 lines ultimately, it is furnished with 35 lines for one panel, or 65 lines for two panels, as many panels being built into the board as are necessary to hold the desired equipment, unless the purchaser specifies that a three panel cabinet shall be furnished.

As a common battery switchboard cabinet, the No. 38 Type will accommodate 100 lines per panel, two panels being the most that it is practical to incorporate in the board for this class of equipment. It is therefore very well suited for supplying 100 or 200 line common battery service. On the 100 line equipment, 10 common battery cord circuits and 5 plug-ended common battery type trunks are provided. For 200 lines 12 cord circuits with 5 trunks are recommended.

Realizing the importance of keeping down weight and also utilizing as little floor space as necessary, the No. 38 switchboard, as well as all of our other models, is made compact in design

No. 38

in every respect. However, the apparatus is mounted in the cabinets in such a way as to afford ample room for all necessary repairs and adjustments, which are very seldom necessary in the Garford Mfg. Company's equipment.

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All Metal Common Battery Wall Telephones

THIS instrument, the most compact Telephone made, is fitted with standard circuits and apparatus. An instrument of perfect reliability.

The case, or cabinet, is made from heavy sheet steel drawn into shape without seams and finished with tough enamel, a smooth velvety finish that will not crack or peel off. Other exposed parts are heavily nickel plated—the result being a beautiful and attractive instrument. The Transmitter is mounted on a compact adjustable arm which is made from drawn metal parts; a spring which will not work loose, holds this arm in its various positions. Other features of advantage are incorporated in this instrument, such as removable lever type hook switch, self contained ringer. Special care and attention has

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You will get maximum results at minimum cost when you use Garford Common Battery Equipment. A great number of successful operating companies have had this fact proven to them to their complete satisfaction and we are ready to prove it to you.

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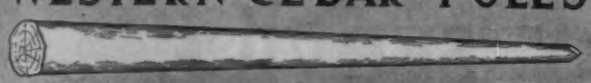

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Cook's No. 10 Heat Coils
Now Giving
SATISFACTORY SERVICE

1/8 OF 1%
AVERAGE MAINTENANCE YEARLY

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Average number of coils installed per exchange ..... 5089.
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Have proven their superiority over practically every transmitter on the market. Every feature of their construction shows superiority.

A special metal alloy diaphragm mounted on oiled muslin, insures maximum susceptibility and absolute freedom from trouble arising from dried out and cracked rubber.

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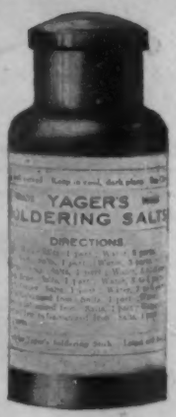

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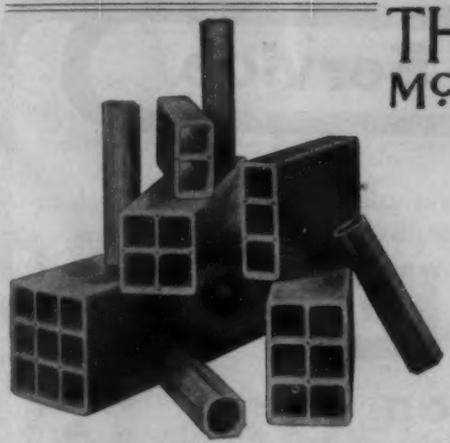

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Model 280

Are especially adaptable for use in telephone inspection service. Instruments are provided with a neat leather carrying case and shoulder strap, or they may be slipped in the coat pocket.

These are strictly high grade instruments, possessing the excellent characteristics which have made Weston Standards famous throughout the world.

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Correspondence is solicited and bulletin No. 8 giving full description of these instruments, and also Weston Miniature Precision Switchboard Voltmeters, Volt-ammeters, Ammeters and Mil-ammeters, also Portable Battery Testers, will be sent upon request.

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Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves
PUBLISHED WEEKLY BY THE TELEPHONY PUBLISHING COMPANY
MONADNOCK BLOCK, CHICAGO

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$3 a Year U. S., Cuba and Mexico
$4 Canada, $5 Other Countries

RELATION OF WISDOM TO STUDY.
Every pound of wisdom requires sixteen ounces of some sort of study, either study of books or study of experience.—Parkhurst.

We Are Pleased to Report.

Ever since its first issue Telephony has carefully and earnestly endeavored to place before its readers—the telephone men of the world—the most helpful, constructive thought available. The upbuilding of the Independent industry has been the dominant motive of this publication for 14 years, and a modest candor impels its editor to state that this motive has been recognized and appreciated by thousands of men in the field—both big and little. Everybody will gladly concede that for years one of the most forceful and constructive factors in the industry has been J. C. Kelsey, whose activities in every branch of the business, from lineman to exchange manager, professor of telephone enginering, rate expert, and sales engineer have been marked invariably with success. As the "discoverer of depreciation," Mr. Kelsey has done more to put the telephone operating business on a stable, permanent basis than any other man in the last decade. Mr. Kelsey is well known to all Telephony's readers, and he is to become even better known, for we are happy to announce that henceforth he will be an integral part of this journal's organization.

Mr. Kelsey has now become financially interested in Telephony, and will be intimately connected with the organization to which he will devote his entire time. His wide acquaintance in the field and his comprehensive knowledge of every phase of the telephone business undoubtedly will enable this publication to serve the Independent industry more efficiently than ever. We feel like congratulating our readers, Mr. Kelsey and Telephony itself, for here is presented a triple alliance that—like all American institutions—far surpasses the European combination, bearing the same name, for stability and genuine merit.

We think our subscribers will agree that this combination will prove effective in carrying out a constructive policy for the telephone industry, which we all believe to be the best business on earth.

Time for Work.

The vacation season is now over. The departmental routines, which were more or less disturbed during this period, are now swinging into the steady stride of regularity. The tang of autumn is in the air. It is time for work—for capable, earnest, constructive work. As a nation, we have responsibilities of an unusual kind. The upheaval in Europe has placed new burdens upon our shoulders. We must bear them for the benefit of mankind. If we acquit ourselves well, the task will bring us both honor and profit. Our problems are great and work is the only solvent for them.

Through a most fortunate combination of circumstances the United States is in the most stable condition of any country in the world. We have available, a large amount of emergency currency, the circulation of which is backed by ample reserves in the United States Treasury. This will carry the country until the time when the Federal Reserve Board completes its organization and becomes active. Our crops are unusually large. We have passed through a most drastic period of liquidation of credits. The stage is now set for a period of prosperity, but it will require work—the kind that demands brains and brawn. Rightly and capably done, it may save a world, for the the entire world is looking to America—the only busy work shop.

The telephone fraternity, individually and collectively, must take part in this work. This is no time for pessimism. "Optimism" is the watchword. The coming era of prosperity must not catch telephone companies napping. Inadequate facilities must be made adequate so as to meet the demand. Methods must be revised for handling greater business more efficiently. In brief, the work of planning for the new conditions which will surely confront us should be done at once. The necessary arrangements for carrying out the plans should follow as a part of the work which is expected of the United States by the world at large.

Cowardice, alias Caution

By HERBERT KAUFMAN

You can go farther. There's nothing in the road. The wall which halted you, is a hallucination created by your own timidity. Put it behind you and set your back against it. If you must "make believe," turn the delusion to account, and pretend the fright that forces fight. The longer you delay testing your strength, the less strength you bring to the test.

You've convinced yourself that you can't surmount opportunity. Hesitation has been your adviser so long that it has magnified ordinary hurdles into seeming barriers.

You've become a "tomorrow man." All your Optimism is for the future. You honestly believe that you will do it the "next time." So, day by day, you fritter out the rich years—laying schemes and as regularly laying them aside—temporizing—postponing, filled with a sneaking faith in yourself but cowed from effort by fear of failure—a man of genuine ability flunked by a funk.

It's your misfortune that you never had a real case of bad luck. It takes a shake-up to make some folks wake up. You're browbeaten by doubt. Like a timid boy in the hands of a school bully, you won't learn how hard you can hit till genuine trouble pushes you into a tight corner from which there is no escape except by scrapping your way out.

There are no supermen. The margin of difference between humans is really very slight. Most of us belong to one big class; are pretty evenly endowed, and for most intents and purposes equally competent.

But here and there in the broad mass, one finds an individual who has caught the trick of assuring himself that "next week" will be too late; that it's "now or never"; that a chance, if passed, may prove his last.

They realize that Providence has so many demands on her offices that she may forget to return—so they hasten to help themselves to the best within reach. And while you're picking and choosing and vacillating, one of them is likely to overreach you.

At present you possess so little, that you can afford to risk much. Dwarfs don't fall far. A reputation can't be lost before it's founded. Up to now you've done nothing to attract attention, and if you do bungle, there is no one to see it.

Nonentities are frequently afflicted with an exaggerated ego. Lacking important problems to occupy your mind, you live too much within yourself and over-emphasize the significance of your trivial affairs. The solemnity and caution with which you weigh every move, is ludicrous.

You're an actor who plays in an empty theater, and then searches the news for adverse criticisms of the performance.

Do something! The misplays won't count while you don't. Experiment with experience. You're sadly in need of the practice.

Genuine hope can stand a mighty lot of bruises. Will feeds on disappointment. The process of defeat is never so terrifying as the contemplation.

Ambition must anticipate an initial knock-down or two. The first will prove the worst. After you've recovered your wind and rubbed your sprained pride with common sense, the succeeding ordeals won't bother.

Fighters aren't born—they keep bucking stronger men to acquire education. Every aspiring pugilist is eager to join the training camp of a champion. It's worth while to get hammered black and blue by the master of an art. By remembering how it was done, one can with practice become a master, too.

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The Telephone, An Instrument of Great Economic Value

Some Concrete Instances of the Telephone's Economic Utility—Suspension of Service in Business Districts of Large Cities Greatly Reduces Commercial Efficiency—Scope of Utilization of Instrument Being Extended in City and Country, Office and Factory

By Stanley R. Edwards

At an early hour one morning last November there was a fire in the main telephone exchange in Montreal. The blaze did not last long—about three minutes—but before it was extinguished, an important section of the interior cabling was greatly damaged. So serious were the results that service to 13,000 subscribers in the business district was completely cut off. It was many days before even a partial telephone service could be furnished. Montreal business men, accustomed to the use of the telephone for transaction of business to an extent which they had never before realized, had vividly impressed upon their minds, the extreme importance, or economic value, of the telephone to the business world. In place of the telephone, messengers were used, and cabs and automobiles employed, to reduce the time element in delivering messages. The mail and telegraph were utilized to an unusual extent. Passage in the streets and hallways of buildings in the business district was difficult; elevators were taxed to their full capacity during all the business hours. And yet, with all these agencies for facilitating communication, transaction of business was retarded to an astonishing degree. Business men of Montreal will not soon forget this striking demonstration of the efficiency of the telephone as an economic agent of communication in transacting business.

Linotype Operator Receiving News Dispatch Over Long Distance Telephone and Setting Up In Type As Received.

Business organizations are continually utilizing the telephone for purposes entirely out of the ordinary. In the large department store of Marshall Field & Co., in Chicago, a special telephone system is provided for the exclusive use of the repair garment department. By the use of this system, the keeping of time records is transferred from the employe doing the work, to a clerk located at a small telephone switchboard. Upon starting to repair or alter a garment, the operative reports, by telephone, to the clerk, giving her the job number assigned to the work. The time is recorded on the job ticket, and another entry is made when the work is reported completed. It is estimated that the use of this system saves a large amount annually.

In New York City, in the large dry goods house of Lord & Taylor, the telephone is used in giving dictation to stenographers. The stenographers are located in a large room in which is placed a specially designed table, provided with typewriter positions on each side. At the end of the table is a small telephone switchboard which has connection with the firm's main switchboard, the number of connecting lines being equal to the number of stenographers. Each stenographer is provided with a regular telephone operator's set, consisting of a head receiver and chest transmitter, and means for connecting with the small switchboard. Both hands are therefore free to take dictation, either in short hand, or direct on the machine. The use of this plan has resulted in considerably greater efficiency than under the former system where the telephone was not used.

This plan of taking dictation over the telephone has also been adopted by some public stenographers. They carry a supply of the letterheads of their regular customers and in many cases sign and mail the letters, sending carbon copies to their customers.

In many retail stores, a special telephone system is used for giving the clerks information as to extending credit to purchasers. An extension of this idea is in use in several of the large cities of the country by the credit departments of

retailer's associations. In Omaha, each member of the association, who has a credit department, is notified over a direct wire of any new customers being given credit, or of an old one failing to keep his promise. The credit ratings of about 35,000 customers of the Omaha retailers are on the list. This in-

Fire Fighters Use Telephone to Regulate Water Supply.

formation is readily available by means of the direct telephone lines between the retailer's office and the association's credit department.

As an aid to the sales development of a business, the telephone is being utilized to a greater extent every year. Indeed, one firm in Boston has found it advantageous to lease a circuit between New York and Boston. A customer calling up the number given in the New York telephone directory obtains, without toll charges, immediate connection with the Boston offices of the company. By this means, the business house has practically a branch office in New York without any expense for rent, light, etc. Business is handled as expeditiously over the distance of 230 miles as though the customers were in Boston. This plan is also used between New York and other nearby cities.

Headed by the Fidelity Trust Co., of Portland, Me., a banking syndicate canvassed the entire state of Maine by telephone; that is the banks, financial institutions and the syndicate's prominent clientele were called upon. Over $2,225,000 of 5 per cent. notes of the Maine Central Railroad were sold in this manner. The expense for toll charges was less than $175—an insignificant sum compared with railroad fare, hotel bills, and incidentals which might have been incurred.

Many other utilizations of the telephone for sales purposes are recorded. A novel one is that of selling phonograph records. Patrons unable to visit the office of the phonograph company hear, over the telephone wires, the new records played. They then decide which ones are wanted.

A few years ago it was a great novelty to be able to telephone from an ocean vessel at anchor, or at its dock. Today, passengers can converse with friends as soon as the vessel reaches its docks. The large vessels all have private systems installed to furnish communication with all parts of the ship. The lookouts, perched in the ornamental figure head of the Imperator, one of the largest vessels afloat, are not isolated from the ship's executive officers. They are in reality, as far as hearing is concerned, right at their sides, for telephone lines connect them at all times.

The fishermen along the Atlantic Coast make constant use of the telephone upon their return with their catches of fish. Their products are sold to much better advantage than formerly, for they can quickly get in touch with the best markets.

Coal mining companies find an economic tool in the telephone. The officials have discovered that it eliminates time and space most satisfactorily for the transaction of their business. Orders are frequently given over the telephone to mines hundreds of miles distant, for rush shipments. The supply of cars thus necessitated is secured by prompt action through the agency of the telephone.

For the protection of coal miners, a number of states obligate the coal companies to install telephones at various points in the workings. These telephones have on several occasions been of inestimable value to the miners.

In a five-story office building in Fort Wayne, Ind., telephones are utilized for an unusual, although extremely practical purpose. Every motor in the building—and there are many for various purposes—is equipped with a telephone transmitter, its mouthpiece being placd close to the commutator. The engineer in charge can make connection with the transmitters on the various motors and by the sound, judge whether or not they are running properly. By this means he is enabled to control the speed of the large exhaust fan motor on the roof as easily as that of the pump motor in the basement and that without leaving the room in which the power switchboard is located.

In the tall office buildings in New York, it is quite essential that the elevator starter be in communication with each car as it journeys up and down. As part of the equipment, a loud speaking telephone is installed in each elevator. The starter, by simply operating a key, can give orders to the operator in the moving car, no matter where it may be in its trip.

The use of the telephone for giving fire alarms is too well known to excite comment. The great extent to which it is used for this purpose is revealed in figures collected in one of the large cities. They show that 75 per cent. of all fire alarms are first reported by telephone. In a small town in Pennsylvania, the fire hydrants are numbered; printed lists giving these numbers and the locations of the various hydrants, are distributed among the people. When a fire is discovered, citizens report it to the fire headquarters, giving the number of the nearest hydrant. That is used in sounding the alarm and directing the volunteer firemen to the proper locality.

In several of the larger cities, special water systems, known as high pressure systems, are installed in the business districts for fire fighting purposes. The pressure for the system is supplied by a pumping station. The pumps are driven by electric motors and the water pressure can thus be changed instantly, so perfect is the control over the motors. When an alarm of fire comes in, the pressure is raised to a specific point until orders are received from the scene of the fire.

It is at this juncture that the telephone is utilized. In the district which is covered by the high pressure water system, telephone stations are located at frequent intervals. They are usually placed near the fire hydrants but in all cases are not far apart. Upon arrival at the fire, the official in charge immediately gets into communication with the pumping station by means of one of these telephones. If the fire is confined to the lower floors of the building, the water pressure is adjusted to be most effective for that height. If, however, the flames should break out on the upper floors, orders are instantly given to increase the pressure sufficient to reach the required height —and it is done without delay.

In several cities in the United States, a regular news and entertainment service is furnished over telephone wires from a central station. Special loud speaking telephone instruments are used so that it is unnecessary to hold a receiver to the ear. The same kind of equipment is used in hotels for paging guests, in railroad stations for announcing trains, giving out baseball results and for various other purposes.

In several sections of the country, the Associated Press uses the telephone to disseminate its news reports among certain newspapers in the districts. The telegraph was formerly used and many words were omitted, to be filled in by the papers receiving the service. With the use of the telephone, the receiving newspapers have to do little or no editing.

A further advance in the dissemination of news to papers over the telephone was made recently in Columbia, S. C. A 400-word dispatch was telephoned from a newspaper office in Charleston, direct to a linotype operator in the composing room of a paper in Columbia. The operator set it in type at the capacity of the linotype machine, which was about 42 words a minute. As dispatches can be taken down by typewriter at the rate of 80 to 100 words per minute, it will be necessary to extend the mechanical limitation of the linotype machine before this plan can be used commercially by newspapers. During the test, two other newspapers in different towns were cut in on the circuit and received the dispatch, using typewriters.

The editor, A. M. Blair, of the Times-Observer, Duquesnne, Pa., has demonstrated that a newspaper may be published regularly by means of "service by wire." Mr. Blair fell one day and sprained his ankle. The doctor said he could not leave his home for a month. The editor was thus confronted with the possibility of suspending publication of The Times-Observer, a 12-page paper, as he had no one he could rely upon to gather the necessary news and other matter essential to the make-up of his paper. Naturally he could not consider the suspension of publication so he conferred with the local telephone manager.

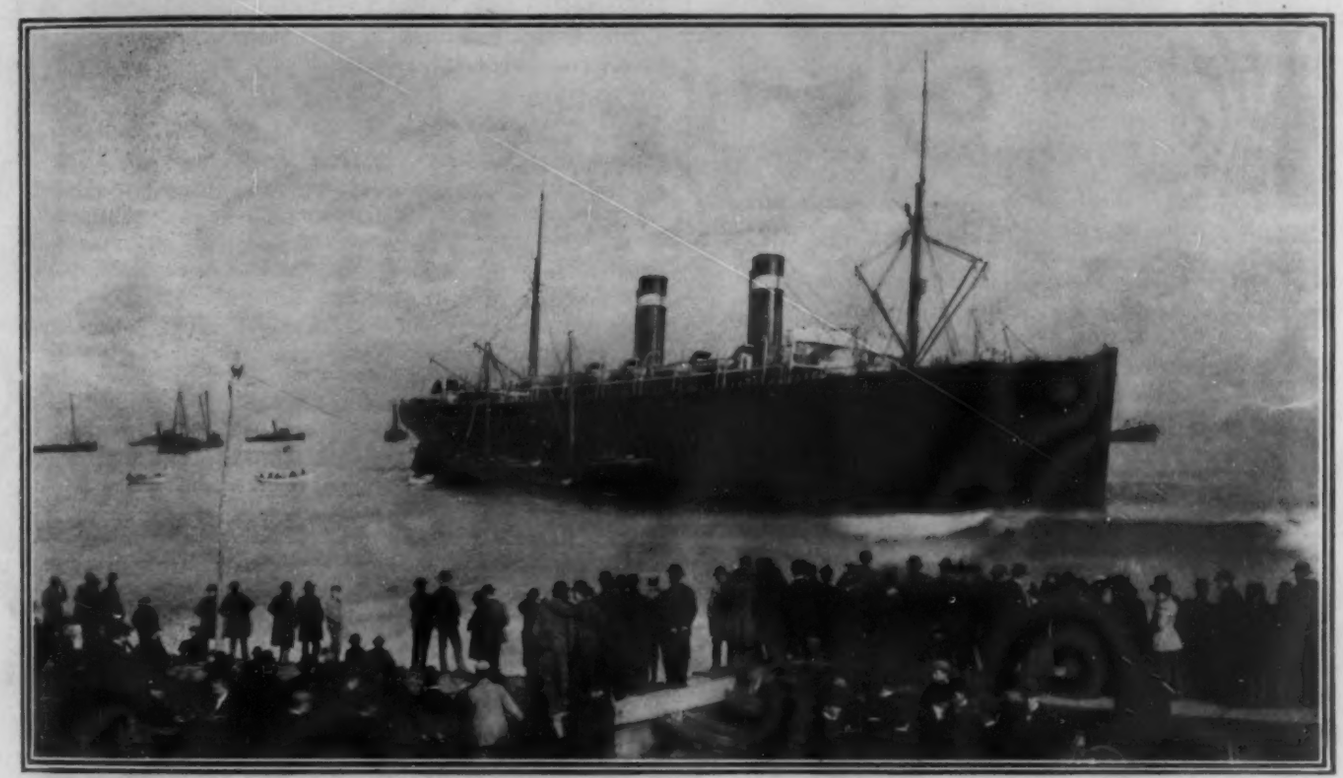
He had called upon the right man.

An extension telephone was placed in his bedroom. The operators at the Duquesne Exchange were told the circumstances. They responded by giving Mr. Blair's line special attention. Seated at an improvised editorial desk, the editor, with his injured foot comfortably placed on a pillow was in close touch with town affairs. His office, the police headquartes, the fire department, the steel plant, the justice's offices and various other places where he usually sought news when "on the street," were instantly available to him. For five weeks the paper was issued regularly without Mr. Blair leaving his home. Yet its standard was not affected, so well did the telephone serve.

An unusual equipment in one of the churches in Dallas, Texas, is the provision of small telephone receivers, placed in a pew at the rear of the auditorium. They are for the use of persons who have difficulty in hearing. The minister preaches directly into a special transmitter placed on the desk before him. This transmitter is connected by wires under the floor with the receivers in the rear pew. The apparatus, it is said, works perfectly, the person listening being able to vary the intensity of the sound so as to hear even the subdued tones used in prayer.

A novel use for the telephone as an adjunct to the United States mail service has been suggested to the postmaster general by P. Kerr Higgins, a prominent Texas telephone man. The idea is to sell a special postal card for five or six cents with the understanding that the postmaster at the destination is to telephone the message upon receipt of the card.

As a "finder of lost persons," the telephone has an excellent record. Sometimes it serves in other ways as in the case of a foreigner who had landed by mistake in a small place near New York. He tendered to the ticket agent, a piece of paper on which were written a few words in a foreign language. The latter could not read it. He also found that the man could not understand or speak English. Several tried their hand with him, speaking Italian and German but to no purpose. Finally a local priest of a Slavic and Polish church was called on the telephone and the case explained. He willingly agreed to aid in talking to the man, who evidently had never seen a telephone. The latter was finally persuaded to allow the receiver to be held to his ear and the priest was told to talk to him. The priest's first words were immediately effective and resulted in a perfect torrent of words from the foreigner. It was then easy to give him the proper directions as to his destination.



Telephonic Connection With An Ocean Vessel At Anchor, a Novelty a Few Years Ago, Is Now Quite Common.

New uses are constantly being found for the telephone, both in the home and in business, and year by year its field is extended. Its economic value as a distance annihilator and economizer of time, which is so precious in these days of modern activities, is fast being recognized. Advantage is taken of its facilities now to a great extent and the future will see yet greater uses.

Indiana Independents Hold Convention at Indianapolis

Eighth Annual Convention of Independent Telephone Association at Indianapolis, Ind., on September 16 and 17 Results in Action on Matters of Importance to Indiana Independents—Proposal to Admit Bell Men to Membership Tabled—Report of Proceedings

By R. L. Jenne

Action on a number of matters of importance to Indiana telephone men was taken by the eighth annual convention of the Indiana Independent Telephone Association at Indianapolis, September 16, 17.

The new utilities law was discussed. It has been found a great benefit in many ways, and with a few amendments, will be entirely satisfactory to the Independent owners.

Effort will be made to prevent drastic legislation at the next meeting of the Indiana General Assembly that will interfere with present working hours for women in the telephone service.

An effort to change the name of the association to the "Telephone Association of Indiana" and admit all telephone men, regardless of company, was voted down.

The convention opened at the Claypool Hotel with words of welcome from Mayor Joseph E. Bell, who was introduced by President N. G. Hunter, of Wabash, Ind.

Mayor Bell's remarks were general and felicitous, and only touched the high spots of the telephone companies' relation to the public, which, he complimented the telephone men, they had always viewed from the angle of the greatest public good at a reasonable return.

He touched upon the Indianapolis telephone situation, and praised William Fortune, president of the Indianapolis Telephone Co., by a statement of faith in him which the convention freely applauded.

"When a merger is effected in Indianapolis, as now seems the desire, I am sure from what I know of Mr. Fortune that he will see that the public is protected," said the mayor.

Speaking of the welcome of the visitors, Mayor Bell declared his hope that their stay in the city might be so pleasant that they would spend all their time after the return home anticipating another visit here.

Address by President Hunter.

President Hunter in his response called attention to the fact that the Independent telephone interests in Indiana represented an investment of better than $20,000,000. He referred to the steady growth of the companies, and of the war between the Bell interests and the Independents, which, he said, was practically at an end.

"The victory rests with the Independent forces, though it did not come in just the way it might have come to give us the fullest credit.

"The cessation of hostilities leaves us nothing to do but render service, and that is enough to keep us all busy. We are starting upon a new era of usefulness that is promising."

E. B. Fisher, the pioneer of the Independent interests of the country, and one of the most active telephone men in Michigan, as well as president of the Independent Telephone Association of America, was the way President Hunter referred to the Grand Rapids man in introducing him for a short talk.

Mr. Fisher referred to his own start in Grand Rapids in 1896, when all of Michigan only boasted 13,163 telephones, an amount only totalling 155 more than the number of the Citizens' Telephone Co. of Grand Rapids, today.

"I believe the Independent telephone companies can be fairly credited with the development of the telephone business which we are all noting with so much satisfaction today. It was competition which made the Bell companies hustle, and meantime, that is what the Independents were doing.

"Some one has said that in heaven, when our souls are spirit, all that we will have to do to be with any one is to think of them, or to be anywhere, is to think of the place. In other words heaven will annihilate time and space. I believe the telephone business today is the most heavenly business on earth, because it has done more than any other business to annihilate time and space."

The heavenly nature of the business provoked both laughter and applause, and Mr. Fisher made it his concluding remark.

Wednesday Afternoon Session.

At the afternoon session President Hunter addressed himself almost entirely to the effect of the public utilities law in Indiana upon Indiana Independent companies.

"We thought it advisable," he said, "to defer the 1913 meeting until this year because of the fact that we were in a maze as to just what the utilities law meant to the telephone interests, and were anxious to hold back and observe before taking any hasty or ill-considered action.

Now we have seen it in operation for more than a year, and after that year's experience we are able to form some judgment of its merits. I am sure I voice the feeling of the association when I say that the law is pleasing to the Independents. It was the Independent association that gave first aid and sympathy to its passage. We have found, I think I may say, that the law compares with any now on the statute books in any state. I am sure I can say that the law is fairly satisfactory and with some amendments can be made entirely satisfactory.

One most beneficial effect of the law has been that it has been an educator. The public is finding that the evils of public utilities administration were largely fancied evils. By giving hearing to petitions and complaints, the companies have been thrust forward in the light of reasonable men, seeking only what is reasonably theirs for giving a public service of definite value.

The law has been a great aid in floating securities. It has stood between the company and an unwise action. It has stood between the public and a poor investment. In other words the law, by forcing the companies to show cause why a bond issue shall be made, and by establishing a commission which is in position to refuse the issue unless it was justified and businesslike, forced them to take the part of wisdom. On the other hand, where bond issues have been made, the order has been entered permitting it, only after the fullest publicity of the company's assets and plans, and that sells bonds. The O. K. of the commission on a bond issue is enough to market them, as it immeasurably strengthens the position of the company, and puts the commission in the attitude of guaranteeing the safety of the issue.

We have found that there is nothing threatening in that phase of the law which provides for the commission taking over the operation of a company by allowing it to do business under an indeterminate permit. The result of such an action is simply to prove the truth or falsity of the com-

pany's contention that it is operating under a charter that is too drastic in its provisions to return a fair profit.

The demand of the law for uniform accounting has been awkward for many companies, but it is a necessary and a valuable regulation. The uniform accounting feature of the law is one that commends itself to every utility. Uniformity in keeping accounts is essential and an adjustment to its provisions will come.

The telephone business has reached such a stage that it is only less important to life than food, clothing and fuel. No family willingly gets along without the telephone. The business has advanced to such a stage that neither war nor panic will effect its development.

The war between the Independents and the Bell company is practically at an end. The law has wisely stepped in and in protecting the public, has protected the companies against each other. The law lets the Bell company go forward, but its spurs are clipped. Companies may unite, but the law has stepped in and defined when and how they shall unite. Both the state and the federal law have been beneficent. I would not have the state law amended in any of its essential features."

Report by Secretary Uhl.

Walter J. Uhl, secretary-treasurer of the company, reported the financial condition of the association in good condition. He said there were a large number of delinquencies outstanding, but that he had not pushed their collection because of the fact that the association had held no meeting in 1913. The balance in bank, he said, was $242.37. Collection of all delinquencies, he declared, would run the amount to $1,546.40. There were no outstanding debts, except those incurred for the convention.

Mr. Uhl urged that a greater number of companies should be represented in the association, the total being 175. He had, he said, the names of 500 companies on the association mailing list, and all of them had been solicited for membership, and had been advised of the convention date and urged to be present whether members or not. Those now members, he said, should urge other Independents to join.

President Hunter joined in urging the importance of taking membership in the association, reminding those present that the Indiana legislature would meet this winter, and that the telephone interests had need to be watchful. He cited the clause on valuation and appraisement in the present utilities law as evidence of the value of being watchful of legislative action.

"The law as framed gave the company no chance for its white alley when it came to valuation and appraisement. No credit was to be given for money sunk in maintenance and repairs. That the defect was remedied is due entirely to the association's activity."

The remarks along this line by President Hunter provoked some discussion as to what action the association should take toward the appointment of a legislative committee, and it was finally agreed that this should be allowed to stand as it now is, with the executive committee empowered to act.

Frank E. Bohn, Ft. Wayne; H. F. Farwell, Terre Haute, and William Fortune, Indianapolis, were named a committee to present the case for the telephone companies to the state commission empowered by the last legislature to investigate working conditions for women. The convention held that the present law should not be changed, and that telephone companies should be exempted from provisions more drastic than now exist. Mr. Bohn reported that he had attended the hearing of the commission at Ft. Wayne and that complaint was being made that the state was not getting the information it needed, as neither employe nor employer would speak freely at public hearings.

The Banquet, Wednesday Night.

Plates were spread for 300 in the beautiful Henry IV ball room of the hotel, and care faded from every brow soon after the music began.

A surprise entertainment was provided. From one of the tables in the midst of the music arose a couple who locked arms and set sail down the aisles between the tables, doing the maxixe and a repertoire of other cabaret

Walter J. Uhl. N. G. Hunter.

dances. They danced around every table, no table being slighted, and the feature was intensely enjoyed.

A commotion in the kitchen was the signal for the projection upon the scene of "Abe Martin," the eccentric Hoosier character made famous by humorist Kin Hubbard. Abe said that he had come to see Mr. Fortune and they had tried to keep him out, because it was a party, but he didn't know that it was a party of telephone men, and he wanted to say right out that he had had more durn trouble with "that two-party line of mine." The familiar trouble complaint coming from the eccentric Abe brought a gale of laughter. Thereafter the monologue never let down, and never lost its telephone flavor. Other features that brought laughter and entertainment were a blackface preacher and a professional quartette loaned by one of the local theaters.

Talks were made by President Hunter, W. S. Vivian, and President Byers of the Iowa Independents' Association. Their remarks were felicitous, pointed by good stories, and intended for entertainment only.

Thursday Morning Session.

F. B. MacKinnon, secretary of the National Independent Telephone Association, spoke impromptu on the subject "Relation of Federal Authorities to Telephone Interests." He had copies of many government publications to which he referred, using them as a guide to help him cover the ground thoroughly.

He spoke of the right of the census bureau to demand reports, and of the similar right of the department of commerce and labor, but devoted most of his time to the relation of the Interstate Commerce Commission and of the attorney general to the telephone interests.

The Clayton bill now before congress he explained as a bill that would attempt to define the terms of the Sherman law, and to make the terms "reasonable" and "substantial" as they appear in the Sherman law more definite.

The question most frequently asked him, he said, was whether the Bell company has a right to acquire neighbor-

ing exchanges not in competition. This, he said, was permitted by ruling of the attorney general, provided such purchases and sales do not lessen competition.

"Many companies," said Mr. MacKinnon, "have an impression that they are not under the control of the Interstate Commerce Commission because they do not connect directly with companies in other states. The law is that if you do any business, or it is possible for you to do any business, connecting with another state, it is interstate commerce. This brings every telephone company, large or small, under the jurisdiction of the Interstate Commerce Commission, which is virtually the controlling body of telephone companies.

The control of the Interstate Commerce Commission often conflicts with the state commission, but this is a matter that is being rapidly adjusted. The state jurisdiction ceases where the federal begins.

In all cases where they conflict it is necessary to make an adjustment of accounting methods to conform with the federal law.

A recent ruling of the attorney general is to the effect that telephone companies when mailing bills for long distance calls, must not pin the original toll ticket to the statement. This is true, too, of original telegrams. This is to prevent the companies losing possession of original records. These original records cannot be destroyed, or allowed to leave the possession of the company, without permission from the government.

A new standard of practice for running wires over or under railroad crossings has been adopted by the National Railway Superintendents' Association. It has the approval of the Interstate Commerce Commission. Every one should write to Washington for a copy of it."

Chairman Thomas Duncan of the Indiana Public Utilities Commission, was on the program for an address, but was unable to be present, and the convention was addressed by Commissioner Edward Murphy instead.

"I assume that you are more interested in telephone rates than anything else over which the commission exercises control. When a peition for higher rates is filed, the commission asks for an inventory of the property. This inventory is checked by our engineers. During the checking of that inventory, any citizen may appear and state his objections to items and valuations therein. After determining upon the inventory, the expense of doing business is determined, and an income that would pay a fair profit on the investment, allowing for depreciation and improvements, and meet running expenses, is found. A rate to produce this income is then established. In fixing a rate the commission desires that the public shall receive the best possible service for the lowest possible rate under a prudent and business like management.

The policy of the commission, under conditions as they now exist, is one that will not permit duplication of plants to any considerable extent. It will not be wise for any company to make a large investment in duplication without consulting the commission."

In response to a question Mr. Murphy said that the commission system of uniform accounting was being worked out not to conflict, but to coincide with the system demanded by the Interstate Commerce Commission.

W. S. Vivian, secretary of the Independent Telephone Association of America, read the only paper formally presented at the convention. This paper was, in part, as follows:

Uniform Methods of Toll Operating.

It is obvious to the most casual observer that the benefits to be derived from a system of operating that will bring about standard, uniform and efficient methods are many and varied.

It may be that there are a few representatives present who have not learned that a system of toll operating has been devised with particular reference to the needs and requirements of the thousands of companies both large and small in the Independent telephone field, that is simple yet effective; that not only meets the needs and requirements of the largest of the Independent companies in a practical way, but also meets the needs and requirements of the middle size and small companies in an equally practical manner. Further, that this system of work is in successful operation in a number of states covering a considerable portion of the United States at the present time and has and is securing splendid results.

This system was first adopted by the Michigan Independent Telephone & Traffic Association after a committee had spent a good deal of time and effort in determining the needs and compiling regulations which would meet these needs, and after receiving very careful consideration at the hands of the board of directors of the Michigan Independent Telephone & Traffic Association. Later they were adopted by the Telephone Service Association, and when the Service Association was merged into the Independent Telephone Association of America, these rules became the standard long distance operating rules of the association, since which time their use has spread into a number of states as a result of the work of the service department of the association.

One company, which operates a large system, after using it for a considerable time refers to it in its annual report in the following language:

"The state traffic association has perfected and introduced a comprehensive system for the handling of long distance traffic. This method or plan contemplates that all operators shall act as a unit in furnishing quick service in a uniform manner. Great improvement to the service has already resulted from this new system, and the earning capacity and value of lines have been materially increased by the elimination of much unnecessary conversation between operators at switching points. Notwithstanding the increase in the toll traffic the lines of the company are less congested than they were before the new system was adopted."

A later annual report of this same company again states:

"The continued growth of the toll earnings is ample proof of the great value of the long distance lines of this company. The most careful attention has been given to keeping the toll lines in the best possible condition. Careful inspection of the lines is made at regular intervals that any defects may be discovered and repairs made in time to prevent an actual interruption of the service. It is of equal importance that the use of the lines be conserved so far as possible for the transmission of the actual revenue earning business. With this end in view the management is paying special attention to the instruction that is being given to the toll line operators. The wisdom of this policy must be apparent to all, as it can be readily seen that the earning power of the toll line investment depends very largely upon the efficiency of the operating force. The training given to the operators is thorough and comprehensive and has enlisted the hearty support and co-operation of every operator. This earnest endeavor to improve in efficiency has resulted in quicker and better service and has made it possible to handle the increased business without the necessity of building additional lines."

The last annual report of this company shows that it owns 10,288 telephones and that its toll receipts were $66,666.71, or $6.48 a station, the highest amount per station of any Independent telephone company of which the association has record.

This was accomplished by means of an active and hearty co-operation with an association on the one hand, and a well

defined and complete policy on the other hand consisting of well maintained lines, judicious advertising and publicity, operators schools and operating rules.

I venture to say there are companies represented here whose toll receipts are not more than one-third of the amount per station above quoted and many that would not run much over one-half.

I venture to suggest further that one very important reason is that you have not got right down to a genuine, active co-operation in a concerted manner with an association organized to carry on this kind of work.

In the Independent telephone field we have had many associations that have generally accomplished much good; still, unfortunately, associations that have standardized the several departments of the member companies in an effective, aggressive and still harmonious manner, calculated to increase operating efficiency, have been, as the saying goes "as scarce as hen's teeth."

What the Independent telephone companies of this country now need, in a big broad way, is an association to which they can come for information along all lines—an association whose real business is to develop and make permanent in a profitable manner the Independent telephone industry. To get the best results we must have faith in each other and faith in the business. We must be willing to give and take and to sacrifice some of our own individual hobbies and ideas for the sake of having a system.

It must be clear to every man here that if we are to have a system, it is manifestly impossible for every man to have his way. He must be willing to abide by the best judgment of the organization.

It is also clear that every man will not agree to do this unless it can be clearly shown that it will actually improve operating conditions and bring added revenue to his particular company. This we claim our system will accomplish. Let us, therefore, notice a few of our present conditions:

Until recently there were just as many different ways of handling our long distance messages as there were companies. This resulted in a loss of 50 per cent. of the earning efficiency of our long distance lines, because of the many unnecessary words, signals, delays and misunderstandings experienced. Not only is that true, but your records show that you are now losing, from one cause or another, one out of every seven tickets offered, or 15 per cent., and of the business completed the records show that checking errors arise to the extent of 15 per cent. more, and this is not all, for due to improper methods and equipment in checking overtime, we believe there is another loss which is equal to another 10 per cent. of your revenue.

The direct loss that can be checked amounts to millions of dollars annually and the losses due to inefficient use of the circuits amount to another million of dollars each year. These are facts which can easily be checked and verified.

If any of you will go to almost any terminal and tabulate the tests, signals and conversations passing between operators in different exchanges during any fairly busy hour, you will find that 50 to 75 per cent. of the work is entirely unnecessary.

Our rules have now been in actual operation for about two years. They have proven practical in all offices under all conditions with operators who have to handle business over Bell lines as well as over Independent lines. They harmonize reasonably close to the Bell instructions along these lines and if the Indiana association should deem it advisable to adopt them and will see that they are carried out and made effective, it will find it will be able to say a year hence, as the company which I quoted at the beginning of this paper, that you find you can handle a greatly increased volume of traffic over the same circuits with less congestion than formerly.

You will find that the operators will be more enthusiastic under this system of work, as they who are on the firing lines constantly, realize its advantages even more than the average manager who is not in such close touch with the details of long distance operating. You will find that if the spirit of these instructions is encouraged, the percentage of

H. F. Farwell. Frank E. Bohm.

lost tickets will be greatly reduced, which will mean an increased earning that will give you additional money for the purpose of building additional lines, which will enable you to handle more business and have greater profits.

Thursday Afternoon Session.

Walter J. Uhl, Logansport, was elected president of the association at the closing session. The other officers and members of the executive committee named, were Frank E. Bohn, Ft. Wayne, secretary-treasurer; M. F. Hosea, Indianapolis, vice-president; and members of the executive committee, to serve with the officers, N. G. Hunter, Wabash; E. K. Spencer, Washington; W. M. Bailey, Richmond; H. F. Farwell, Terre Haute; J. A. Brown, Winchester, and F. R. Parrett, Princeton.

The constitution of the association was amended to permit of the addition of two additional directors, one of them to serve as vice-president. Mr. Hosea and Mr. Spencer were named to fill the vacancies.

The installation of the officers followed the election, and each of the newly chosen men, in brief speeches, promised to discharge his obligations to the fullest possible extent.

A sensation was thrown into the convention by a resolution offered by W. M. Bailey, Richmond. He offered a motion to invite Bell telephone men into the organization, only mitigating the suggestion by a statement to the effect that he favored some provision to prevent Bell men from getting control of the organization.

"I believe that it is time we were all telephone men instead of Independents," he said in a speech explaining his stand. "I know a man who is making a big success of his company, a Bell company, and I asked him how he did it. He said that he was being paid $2,000 a year to attend strictly to his business, and $2,000 a year to leave the other fellow entirely alone. I think we have been spending too much time attending to the other fellow's business, and that it is time we invited these men in and gave our time to consideration of the best means of making money for our companies. I propose that the name of this association be changed to the 'Telephone Association of Indiana,' and that it be made open to men of any company."

The motion was seconded by W. M. Arbaugh, Sullivan, Ind.

F. E. Bohn, Ft. Wayne, attacked the motion on the ground that it was out of order and what Mr. Bailey sought to do could only be accomplished through amendment of the constitution specifying who could be members.

J. C. Bousch, general manager of the long distance division of the Ohio State Telephone Co., was given the floor by consent, and attacked the idea on the ground that the Bell spirit of opposition to the Independent companies had not changed one iota since the federal order to unscramble, saying that within the last 60 days Mr. Fish, at one time president of the A. T. & T. Co., had said that every Independent telephone man must get out of business or die, and he said with that spirit alive, the Independent had no business giving a thought to any matter of getting together with them.

W. J. Uhl attacked the motion on the ground that the Bell company had need to show more of the spirit of co-operation before any Independent should make advances. The Bell organization, he said, had always shown a commendable purpose to be and remain a Bell organization, and he thought before the bars were let down, the Bell request to come and take a part in their deliberations should be forthcoming.

E. K. Spencer, Washington, attacked the motion on the ground that it was apparently the result of misinformation about the attitude of the Bell companies. "If you think they are not after you," said Mr. Spencer, who has just completed the organization of an Independent automatic company at Washington, "just get into competition with them as my company has been."

N. G. Hunter, Wabash, attacked it on the ground that the Independent organization was one for protection of Independents, and would be necessary as long as the methods of aggression practiced by the Bell companies continued to exist. He said the Independents were not for war, but were organized simply to protect themselves. He declared a belief that there was no longer necessity for war, and that the companies could bend their energies on development, but that the time was not ripe to lose their identity or influence as Independents.

W. M. Fortune attacked the motion on practically the same grounds, that the time was not ripe for such a move, that the Independents were still in need of a fighting, active organization to take care of their interests, and that any disposition to let in the Bell companies would create a public opinion regarding adjustment of things in the telephone field that would be entirely erroneous.

Each of the men speaking in opposition to the measure, complimented Mr. Bailey on the evident sincerity of his purpose to further the best interests of telephone men, and the telephone business, and before the debate closed Mr. Bailey again took the floor to stand by his proposal. He said:

"The government and the state commission protect us. I do not think we have anything to fear from the Bell companies. I for one want to get closer to these fellows. I believe that the closer you get to a competitor, the shorter you'll find his horns."

The motion by Mr. Fortune to lay on the table, carried with no one opposing it but Mr. Bailey and Mr. Arbaugh.

Following a short talk before the convention by R. V. Achatz, instructor in telephone engineering at Purdue, Mr. Fortune made a motion that a committee of three be named to confer with Purdue University authorities to see what co-operation the university could offer in helping telephone men to solve, by experiment, such engineering problems as can be handled at the university. President Uhl will name the committee later.

Mr. Achatz suggested that many technical problems needing to be tested by experiment, could be profitably submitted to the university which, as a state institution, was in duty bound to give the best service possible in any such request.

The Toll Clearing Co. of Indiana held its annual stockholders' meeting on the second day of the convention at Indianapolis. The report of officers showed the company to be in sound financial condition. Officers and directors were elected as follows: William Fortune, Indianapolis, president; Walter J. Uhl, Logansport, vice-president; J. A. Browne, Winchester, secretary-treasurer; S. V. Hanes, clerk; directors, S. Tomlinson, Plymouth; D. Agnew, Rochester; N. G. Hunter, Wabash; W. M. Bailey, Richmond; K. B. Davis, Middletown; S. F. Harris, South Bend; C. S. Norton, Indianapolis; and W. W. Washburn, Goodland.

President N. G. Hunter, at the meeting of the retiring executive committee of the Indiana Independent Telephone Association, was directed to send a telegram to Congressman Barnhart, a member of the conference committee to define the Sherman law, urging him on behalf of the association, to oppose the bill as it relates to the telephone interests, as being too drastic and unfriendly to the business to an unnecessary degree.

A list of the exhibitors at the Indiana convention is as follows:

Frank B. Cook Co., protective apparatus.
Indiana Rubber & Insulated Wire Co., Paranite.
Coffey System & Audit Co.
Monarch Telephone Mfg. Co.
Manhattan Electrical Supply Co., Red Seal batteries.
Naugle Pole & Tie Co.
Swedish-American Telephone Mfg. Co.
Reliable Electric Co.
Cracraft-Leich Electric Co.
The Garford Mfg. Co.
Stromberg-Carlson Telephone Mfg. Co.
Kellogg Switchboard & Supply Co.
The Cox Multiple Lightning Arrester Co.

Convention of Ohio Independent Telephone Association.

At a recent meeting at Columbus, Ohio, the committee appointed by the directors of the Ohio Independent Telephone Association to fix a date for the convention of the association, decided on Thursday and Friday, October 29 and 30, the convention to be held at the Hartman Hotel, Columbus, Ohio.

An interesting program will be arranged. The first day of the convention will be devoted to general topics for discussion, which will be of interest to both the investor and the operator. A banquet will be given in the evening. The second day will be given over to operating and technical discussions.

The officers of the association extend a cordial invitation to the officers and members of all other state associations to be present as well as to manufacturers and dealers in telephone apparatus. It is expected to have a large and enthusiastic meeting—"a real old-fashioned telephone convention."

New Independent Telephone Organ in Indiana.

The first issue of Telephone News, the official organ of the Indiana Independent Telephone Association, is being distributed by the Association. It is in a sense a successor of The Bulletin, formerly published, but it is changed in form and general make-up. The News is issued under the direct supervision of a publishing committee and is declared to be the Association's messenger to the Independent telephone companies of the state. It will aim to keep its readers advised as to the development of Independent telephony in the state and procedures before the Indiana Public Service Commission, and to promulgate the fundamental principles of Independent telephony.

Texas Association Convention Postponed.

The convention of the Texas Independent Telephone Association, previously announced for September 28 and 29, has been postponed by action of the executive committee and will probably be held early in November.

Asking Your Indulgence

An Announcement—Fourteen Years with "Telephony"

By J. C. Kelsey

You know the story of Jacob. Not the story of the flim-flam game played by him on brother and father, but the one where Jacob ran into a sort of a confidence game. Jacob was in love with a comely girl called Rachel. Rachel's father, seeing a chance to solve the labor problem, made a bargain with Jacob that if he worked faithfully for seven years, he would give him a wife.

With song on his lips, Jacob worked even overtime, and he waited exultantly at the church for the promised wife. When she unveiled, Jacob found it was Leah—a sore-eyed, red-headed girl. Crafty father had not specified, so Jacob made a new seven-year bargain for Rachel, and found happiness ever afterward.

It seems that the world runs in seven-year cycles. It was Joseph who, watching the seven years of great plenty in Egypt, knew that seven years of famine following, would make him rich. Our bodies are subject to seven-year total changes. And we hear that the seventh daughter of a seventh daughter is possessed of weird powers.

Jacob worked 14 years for Rachel. I have worked 14 years for a share in TELEPHONY. Unlike Jacob I had no seven-year promise, nor any disappointment. I knew by the seventh year that my desire to be a part of TELEPHONY was easily another cycle of seven years away.

I began writing for TELEPHONY as a switchboard man. I was experimenting with wireless telephony, and the editor of the coming paper, TELEPHONY, wired me for a story—to appear in the first issue—January, 1901. That was my maiden story. Another one appeared in the February number. It was my last for some time.

The story that I wrote concerned trunking circuits—and it offended the patent department of the Bell factory. In a few days I went trembling into the general manager's office. I was gently but firmly told that, if I cared to remain with the Bell interests, I was to nip all my literary aspirations right in the bud.

I took the count, but made some mental reservations. I was determined to write—and write I would.

Right here you see the curious effect of continuous writing. I am assuming that all telephone men are interested in every word. That is the unconquerable ego which develops, and for this week, the letter "I" will be rather prominent, although you have a promise that the future will show great improvement.

The wireless article in TELEPHONY led to an invitation to organize a school of telephone engineering at Purdue University. The proposed plan was not a promising one. There was little or no money for apparatus, and as to salary, you need no enlightenment on the average professor's pay. But there was a chance for free speech.

I was writing under the weight of the censor's lid—and found it awfully hard to keep quiet. But it was a factor sufficient, and I gave up the life of a switchboard recluse to become acquainted with Independent telephone men.

I have never had a day's regret. I have found Independent telephone men a source of continued fascination and study.

This study began at the National convention—the year of the riotous banquet at the Sherman House—1902. Our proposed schoolwork was well received by the convention. I will never forget Judge Thomas' welcome, nor the kindly approval of Mr. Sheerin, of Indianapolis—and Mr. Fisher, of Grand Rapids, too. And I do not want to forget the speech of appreciation of W. Gilbert Thompson, then of Hamilton, Ohio.

I felt at last that I was among friends, and I determined then and there to stay with that interest, or be "The Last of the Mohicans" that Fenimore Cooper so wonderfully described.

I then started my second stage with TELEPHONY. I wrote then as a teacher and of things I had learned as a witness in rate fights. Everything was technical—I knew nothing else, and was interested in nothing else.

It is interesting now to look back upon the years of questions and answers—and to recall the prevailing questions of those early days. The greater part of the questioning concerned grounded lines, earth currents from increasing trolley lines, falling drops when the cars passed certain points, and induction troubles.

At this time, there were two telephone associations; one was the National; the other was called the Interstate—nine states about Chicago seemingly controlling the association. As the years went by, the differences of the various individuals were settled, and one new association held sway for many years.

After six years of questions and answers, I gave up, believing that a new man with new ideas would be beneficial to the business.

For several years I was silent. Not entirely so—because every telephone journal was afflicted with Kelsey from time to time. I had discovered that no telephone company was practicing the needful art of depreciation. Even the Bell company, whose officials dwelt so strongly upon the need of depreciation when applied to Independent telephone companies, were not practising what they preached. The day of standard depreciation percentages was yet unborn.

It was an Independent telephone company which actually practiced depreciation first. It created a cash renewal reserve fund, and set it aside to balance the ravages of time and of changes in the art. Today we observe that the state utility commissions have put depreciation charges into practice.

I began my third stage with TELEPHONY in January, 1910. Ten years had passed and I was still on my way to my desire. At this stage I was a sales manager of an Independent telephone manufacturer. I had a new point of view—not technical as I had had as a switchboard man and a teacher, but that of a practical, political or economic nature.

I had a new purpose in life—to try to convince the telephone man that he had fallen into a good business. In other words, my point of view demanded that action be taken to conserve the telephone business to his advantage.

Around 1910, the Bell company had reached the climax of its warfare. It was about to make a change. It had a new president, and he had ideas of his own. The officials were making a great outcry about a universal telephone—one make and one control. It seemed time to make reply, and TELEPHONY came forward with a counter attack.

It vigorously preached the doctrine of local issue—that the telephone is best served by local ownership and control. It showed that there was a place for the universal service, and also a great economic position for local ownership.

TELEPHONY also delved deep into costs and income, and it

demonstrated to the telephone world that a greater part of the telephone exchange could only be operated at great loss by universal control.

It was in 1910 when the first gun of the crisis was heard. That was the Morgan deal in Ohio.

My second story was entitled: "Has Wall Street Come to Us?" I predicted that J. P. Morgan & Co., and others as well, would learn some great lessons before the Ohio situation was cleared. And it has come to pass that the Ohio State Telephone Co. has risen from Morgan purchases. Its success will soon be another story.

It was in 1911 that you came to the National convention with so much mingled fear and curiosity. History was fast in the making. The Blackstone meeting had taken place; the president of the Bell interests stood face to face with the representatives of the telephone interests he had sought to crush.

To this day, some say it was a big blunder for both Independent and Bell men. Blunder or no blunder, it was a part of our history and evolution, and not altogether in man's hands anyway.

You are familiar with the rest. Telephone men always keep close tab on current events. It is TELEPHONY'S proud boast that its readers actually read the paper. In all my travels and visits, I have ever found the paper unrolled and read. Telephone men want to know and need to know; that is why this weekly message seems a privilege to me.

Today, I am starting on my fourth stage with TELEPHONY. No longer am I a switchboard man, teacher or sales manager. I am a part and parcel of TELEPHONY. It has become the center of my activities—not a careless side line. In 14 years I have attained my desire. I am in a business I like. I can come and go—and work for the conservation of Independent telephony without fear or favor.

Continuous writing develops habits and fancies. It takes a great deal of nerve to take two full pages of a magazine to exploit the "I." I could not have done it a few years ago, but a daily association with telephone men has given me courage to approach them on any footing.

I am going to continue the attendance of conventions, and all meetings where the good of the telephone business is at hand. I want to continue to help you analyze your efforts, to guide you if that is possible and to point out dangers if they exist.

We are in a great business. It is peculiarly a personal business. This is shown by the letters that come to this office. I just received a letter which says: "I get spells when I would like to dump the whole plant in the middle of the lake. In fact, I have been laboring under such stress this week, but your article has put new 'pep' into me."

You know we all have these spells—bankers, railway magnates, merchants, all have such spells. Every man gets into the mire of disgust quite often—and a telephone man has just as much cause as anyone.

A simple word, a snarl, a complaint, or a misunderstanding of a subscriber—and your whole day is spoiled. It takes years to become immune. There never was a business so sensitive and yet so enduring.

As I say, I have worked 14 years for a share in TELEPHONY. I wanted a part in TELEPHONY, to be near the telephone man.

I went to work as a power and light man, but there was never a fascinating hour in its pursuit. I accidentally found the telephone business in 1898, and just adopted it by force. It took a long time to learn its many and various difficulties, and I am still studying them with not the least hope of solving them all. As long as the world lasts, human beings will stagger and stumble under the load of unsolved problems.

I am making my bow to my readers as a responsible part of TELEPHONY, and from a new point of view. The natural viewpoint of such a periodical as TELEPHONY is an unbiased one. In other words, it is an open-hearted one, selfish in only one thing, and that is self preservation.

TELEPHONY needs you and we want you to need TELEPHONY; to make use of it, and feel that you too have a stewardship in it. If you survive the great economic test, so do we. If you do not, then we fall with you, quickly. We all have examples of men who quit the telephone business too hastily, because they could make an unsuspected dollar. You know they have never been really happy since.

I have always looked upon TELEPHONY as a history of our great industrial fight. Much material has entered these columns, not so much for value to telephone men as for sidelights on contemporary occurrences. The department is called our financial column and it might be called a historical column. I have aimed to use prevailing expressions—and to perpetuate them.

There has been much to criticise in my column. A New England man accuses it of blasphemy; another accuses it of self interest, and so it goes. No man can hope to please everyone. He can only hope to tread carefully in his effort to help and construct.

We all realize now that war is worse than we had suspected. Let us take a leaf from the page of the old soldier—simply enjoy the telephone war as a memory. We have really and truly had a great war. We fought backward and forward, with great loss, yet at no time was either line of battle destroyed. Such a condition is absurd. Men, or institutions of equal strength, have no economic justifications in fighting. That is the telephone situation today.

These 14 years have seen mighty changes. Faces, fortunes, maps, companies—all have been tossed about by fate.

Look over the January, 1901, issue of TELEPHONY—the very first issue. You will realize what I mean. It makes me feel bad, although I never knew the early workers personally.

May the present generation of TELEPHONY'S friends, writers and readers go on with fewer changes.

Never was Independent telephony in such magnificient condition as today. When the European war is over, it will go forward with an impetus that will dim the glories of any past year.

Some of you have worked seven years, some of you, 14, and some 21—you are entitled to reward, and it is coming soon.

MORAL: Let's all get to work.

Earnings of Keystone Telephone Co.

The earnings for August and for the last eight months, of the Keystone Telephone Co., of Philadelphia, is shown in the following statement:

	For Month Ended Aug. 31, 1914.	Year Previous.	For Eight Months Ended Aug. 31, 1914.	Year Previous.
Gross earnings.....	$112,546	$105,267	$880,262	$837,106
Operating expenses and taxes	53,608	53,211	433,452	424,491
Net earnings.....	58,938	52,056	446,810	412,615
Less interest charges.	26,037	25,517	207,853	202,782
Net surplus	32,901	26,539	238,957	209,833

One Telephone System at Bozeman, Mont.

The Mountain States Telephone & Telegraph Co. has eliminated the dual telephone service at Bozeman, Mont.

Inconsistencies in American Telephone Practice

A Discussion of Methods of, and Practices in, the Plant, Operating and Executive Departments of Telephone Companies, Which are not Economical When Viewed from a Combined Engineering and Commercial Standpoint—The Toll Line Plant—Third Installment

By Constructive Critic

Expensive heavy copper circuits are prejudiced to a more or less degree in almost every long distance telephone system, by the use of high resistance cables where the long distance lines enter an office for either a loop test or for a terminating or legged service. The equivalent to this is using a longer length of cable than is absolutely necessary by not bringing the aerial wires as close to the office as possible. The use of cables possessing high electrostatic capacity under such conditions, is quite as prejudical as excessive resistance. It may be much more so, as the longer the circuit, if aerial, the more serious is this effect. To reduce the resistance of cable conductors, engineers—mostly of the old school—are frequently found who resort to multipling the cable pairs, losing sight of the obverse effect of raising the capacity, the net results being a serious loss in transmission capabilities along the line. Under certain conditions, this doubling of cable pairs serves as an effective makeshift in local common battery operation, and may often be consistently practiced.

Toll Line Cables.

An instance comes to my mind where a struggling long distance telephone company, constructing a lead 230 miles in length between two cities, was obliged to cable an intervening river 4,900 feet in width. The salesman of one of the largest and oldest manufacturers of cables appeared upon the scene to effect the sale of that cable. After a conference with the president of the company, he succeeded in landing the order—the engineer was not consulted. The president naturally assumed that a reputable manufacturer would have a salesman who would know what he was talking about—more than his engineer—so he swallowed this salesman's advice, bait, hook and sinker.

The salesman represented that the talking or transmission efficiency would vary as KR, which, of course, is not true under such conditions as this cable was to be used. In fact no basis of determining the efficiency of a cable can be even approximately accurate that does not take into account the resistance and electrostatic capacity of the line of which it is to form a part; the location of that line with respect to the location of the cable; the length of the line on either side of the cable; and the resistance of the aerial wires. The grade of transmission contemplated must also be considered.

The president had an idea that since the line conductors were No. 10 B.&S.G., the cable should be of similar gauge so as not to "choke the speech" where it enters the cable. With such ideas in the president's head, it looked like a possibility to sell a very expensive cable, so the salesman pushed it for all it was worth. Well, when he got through with the session in the front office, he had a signed order in his pocket for a No. 10 B.&S.G. cable to have an electrostatic capacity of .13 mf. regular, factory test. The conductors were to be silk wrapped, over which were to be placed two wrappings of paper; lead sheathed and steel wire armored—price $1.45 per foot f. o. b. factory. The salesman recommended double armor wires served in opposite directions, but it was decided, upon deliberate meditation, to risk single armoring.

I don't want to overlook noting the magnanimity of this spellbinding salesman in letting that company off with standard galvanized—not gold plated—armor wires. Of course, such a length as 4,900 feet could not be made and shipped conveniently in one piece, so it was sent in three pieces. That meant three splices and a lot of handling. The splices raised the capacity materially, due to the parafin used. Undoubtedly the extra handling had a similar effect. How much these elements affected the capacity is not known for no test was made after laying. In fact there is no absolute reason to believe that the cable actually tested at the factory according to the representations of that unctuous salesman. The cable was spliced and laid at great expense, and I believe is still in service.

The question is: Would not a No. 14 or even a No. 16 B.&S.G. cable, having a correspondingly lower electrostatic capacity, or even the same electrostatic capacity, made and laid in *one piece*, have been a more practical and consistent cable, electrically and mechanically—not to say financially?

If it ever becomes necessary to raise that large, stiff cable, with its three splices, from the bottom of that deep river, for repairs or otherwise—but let's not borrow a calamity!

To get at the above problem in a rough, practical way, with an attempt to be consistent, let us see what effect using a cable of No. 16 B.&S.G., in lieu of the No. 10 B.&S.G., would have upon speech transmission. We may assume the conductors to be 5,000 feet long, the 100 feet extra to cover spiralling. The resistance of each of the No. 16 B.&S.G. conductors would be 20 ohms. This cable is located near one end of the lead.

We will assume that the No. 16 B.&S.G. cable contains 10 pairs of conductors and that lines of the following length are routed through it:

4 pairs No. 10 B.&S.G. copper circuits, 50 miles long
2 pairs No. 10 B.&S.G. copper circuits, 100 miles long
2 pairs No. 10 B.&S.G. copper circuits, 150 miles long
1 pair No. 8 B.&S.G. copper circuit, 200 miles long
1 pair No. 6 B.&S.G. copper circuit, 400 miles long

The following table shows the amount of copper required, if spread uniformily over the entire aerial wires, to offset the increased ohmic resistance of 14.94 ohms per conductor in the cable, using No. 16 B.&S.G. in place of No. 10 B.&S.G. The temperature is assumed at 65 deg. Fahr.

Size, B.&S. gauge	Number of conductors	Length in miles	Resistance, each line conductor	Excess weight each pair	Total excess weight, lbs.
No. 10.	8	50	267.5	998	3,992
No. 10	4	100	535.0	970	1,940
No. 10	4	150	802.5	960	1,920
No. 8	2	200	662.0	2,560	2,560
No. 6	2	400	833.0	6,120	6,120
				Grand total excess weight,	16,532

This total excess weight at 15 cents per pound amounts to $2,479.80.

No. 10 B.&S.G. armored submarine cable (not silk wrapped under the paper insulation) having an electrostatic capacity, regular, of .10 mf. may be purchased at 83 cents per foot, or $4,067 for 4,900 feet; No. 16 B.&S.G. of the same type of cable, at 30 cents per foot, or $1,470 for 4,900 feet. The saving in cost of the No. 16 B.&S.G. cable would thus be $2,597, not counting the splicing expense and the increased cost in

laying the larger cable. The net saving is thus $118 when used under the assumed conditions. However, there are usually some idle pairs, left for the time at least, so the saving made in using the smaller gauge cable would aggregate an even greater sum.

Note the similarity in amounts of excess copper required in the 100-mile and the 150-mile lines; that the excess of copper decreases with the length of the line; and that the larger the gauge of the aerial wires, the more copper is required to offset increased resistance occasioned by substituting smaller gauge cable.

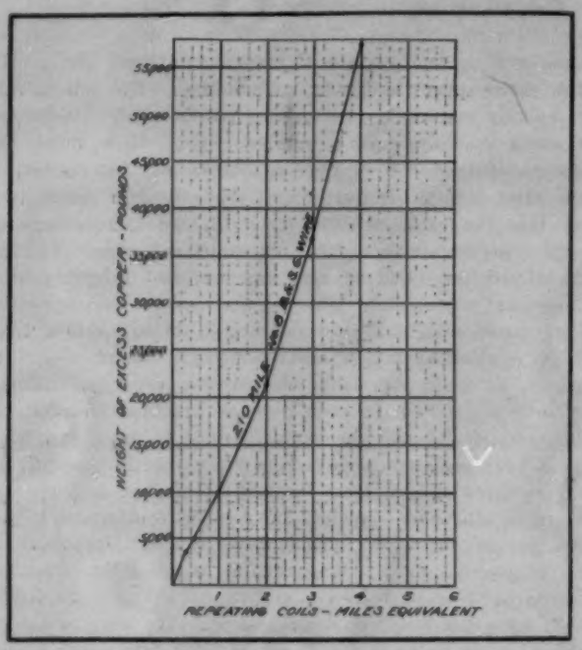


Fig. 1. Copper Losses Due to Use of Various Repeating Coils.

Now, what it is desired to call attention to here, is that, were all the aerial line conductors of No. 10 B.&S.G. copper, the weight, and therefore the cost of copper to offset the higher cable resistance, would be much less than shown in the grand total; hence more favorable to the No. 16 B.&S.G. cable. Further, if the aerial line conductors were all, or mostly all, of No. 6 B.&S.G., or even No. 8 B.&S.G. copper, the grand total cost of excess copper in all lines to offset the extra resistance of the smaller gauge cable would aggregate a larger amount than the increased cost of the large gauge submarine cable. So we may conclude that large gauge submarine cable is not consistent with small gauge aerial lines—assuming, of course, that large gauge aerial wires are used only when a high standard of transmission is sought—and vice versa.

This reasoning does not take into account the fact that the electrostatic capacity (and inductance) of the lines will be slightly increased, due to the increase in cross section. But the net effect of these properties, as combined, may be assumed as almost negligible for the small increase in cross section. The calculated mutual capacity in microfarads per mile of No. 13 B.&S.G. aerial wire strung on 12-inch centers is .0078144; for No. 10 B.&S.G. wire it is .0081840; and for No. 8 B.&S.G. wire it is .0085530.

There is another factor; a submarine cable may become a total loss at any time, with little or no salvage value. Its depreciation is usually considered as 10 per cent. per annum. There is a salvage value to copper line wire—the depreciation usually being considered as 1.5 per cent per annum.

In most instances, the small loss of transmission efficiency in the case of short lines, particularly, would not require to be offset by increased line copper, besides it would not be practical to use fractional gauges. However, a larger even gauge could be strung a sufficient distance to offset the loss if desired, although the same economy in copper would not be attained as it would be if uniformly distributed. An alternative is to use the amount saved in adding to the section of one or two of the longest lines only. A method that has been used, is to provide a few pairs of extra large conductors in the cable for use in very long lines. While this affects the first cost of the cable, making it cheaper than if all pairs in the cable were of large gauge, it still has the disadvantages mentioned above if the line conductors are not of large gauge.

There are many cases where the greatest pains are apparently taken to have cables of the lowest electrostatic capacity procurable and of the largest practicable gauge, where they are to be used in series with a toll line, and at the same time no attention is given to legs or multiples from the line. High capacity cable, or needlessly long lengths of cable connected in the latter way, is almost as detrimental to speech transmission as is a similar cable connected in series, the essential difference being that no ohmic resistance is included.

To illustrate in a general way the effect of including resistance by the introduction of excessive length of cable—leading-in or switchboard—or to employ cable of small gauge and thus having relatively high resistance, the statement may be made that, for every ohmic value of resistance within reasonable limits which is introduced into lines of commercial lengths (obviously high resistance fuses, heat coils, cords, or other apparatus would have the same effect), the transmission strength along the line will be attenuated to approximately the same amount as though a weight of copper were taken uniformly from along the line, equivalent to the weight involved in a similar ohmic value of the line conductor used. For instance, if 10 ohms of fuse resistance is needlessly added, and the line wires are of No. 8 B.&S.G., the latter running 79.69 pounds per ohm at 65 deg. Fahr., the loss in transmission would be approximately the same as if 769.9 pounds of copper were uniformly taken from along the line wires.

It does not require elaborate calculations to deduce that the relatively small saving when using small gauge cables, or in saving the cost of bringing the aerial wires close to the office before entering cable, may be the very poorest kind of economy in toll practice. As concluded before, where submarine cables are used (which increase very rapidly in first cost according to gauge of conductors, due to the fact that the lead sheathing directly over the core, and the wire armoring not only is relatively more costly than the cable itself, but increases in cost rapidly relative to the diameter), the depreciation upon them being much more rapid than upon other cable due to the hazard, the nominal advantages of this type of large gauge cable may not hold true, commercially, under any but special conditions where the highest possible transmission is desired at every point regardless of other considerations.

The effect of using twisted pair, rubber covered wires as commonly used in legging to toll lines, for the drop wires to buildings and for interior wiring, may mean the introduction of very appreciable electrostatic capacity to the line. This, of course, affects all transmission along the line, differing from the effects of legged ohmic resistance in that respect. The equivalent loss in "transmission value" would normally be found to be considerably more than the extra cost that would be entailed to have the wires run open and apart to the equipment. An appreciation of the "shunt" capacity of paired, rubber covered wire may be had by connecting an open length of about 100 feet, into a talking circuit as a series condenser, and noting the strength of speech that may be maintained across the wires of the pair, inductively.

A case came to my attention, recently, wherein a company having heavy copper toll lines, costing a very large sum, had the most inefficient central office equipment. In this instance,

a connecting company's engineer, who was unusually particular as regards transmission, brought the inconsistency to the attention of the general manager of the first mentioned company.

Toll Switchboard Equipment.

The engineer upon being questioned as to the expense of substituting more efficient equipment, replied that the cost would be $350 to displace portions of the existing central office equipment with more efficient types—only the repeating coils and clearing drops were suggested to be changed at that time. The general manager replied that he thought the transmission was good enough from the fact that no complaints had been made by users. Then, too, the toll board was new, furnished by a leading manufacturer; besides he did not like to charge off or junk equipment until it had outlived its usefulness—it did not look well.

He thought that the coils and clearing drops were too good to throw away—hundreds of other companies used the same kind of equipment. In short, he could not "afford" to change the equipment. The facts were, he could not afford not to change the equipment, to be at all consistent, or I may say commercially rational. To put the matter in another way: If the transmission attained was plenty strong enough, then the only sane answer is that some thousands of dollars of good money had been thrown away—"blown in" on heavy copper wire throughout the system, where lighter copper wire or perhaps even iron wire in some cases would have given as good and as strong transmission if the more efficient central office equipment had been used.

The repeating coils, desired changed, had a standard cable equivalent of 3½ miles under "standard" conditions, or the equivalent to adding approximately 62 miles of No. 8 B. & S. G., 264-lb., copper line, to each line entering the toll switchboard. To have substituted repeating coils having 0.5 mile equivalent (coils purporting to have an equivalent of 0.35 mile are now made) would have meant a saving of three miles standard cable equivalent. To have attempted to offset this loss, entailed through the inferior coils in use, would have meant to increase the section of the line wires of a 210-mile circuit of No. 8 B. & S. G. copper, entering the toll board, by approximately 22,000 circular mils section—meaning line wire

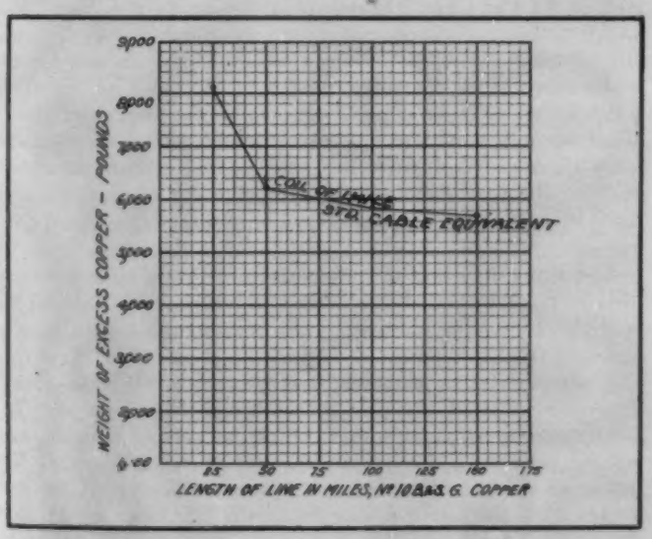


Fig. 2. Copper Losses With Varying Length of Line.

weighing 352 lbs. to the mile per conductor in lieu of 264 lbs. The aggregate excess weight, as shown in the accompanying table, would thus be 22,176 lbs., costing $5,544 at 15 cents per pound, for this one circuit.

An ordinary clearing drop has a standard cable equivalent of 0.5 to 1, depending upon its resistance and reactance.

A repeating coil of the one-half mile standard cable equivalent class costs $2.75. Far more would have thus been saved on this one line circuit in cost of copper—or gained transmission efficiency, meaning practically the same thing—to have purchased and charged to this one 210-mile circuit, the entire lot

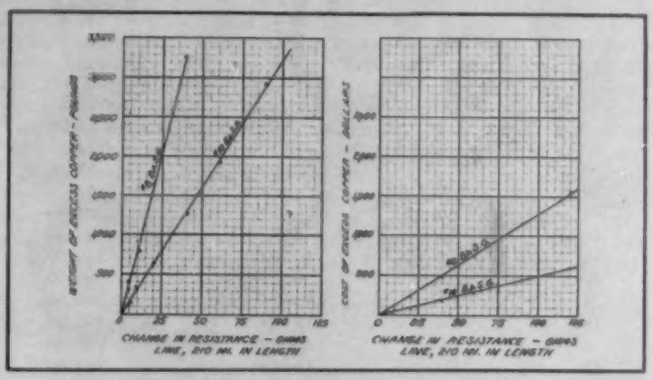

WEIGHT OF EXCESS COPPER - POUNDS
COST OF EXCESS COPPER - DOLLARS
CHANGE IN RESISTANCE - OHMS LINE, 210 MI. IN LENGTH
CHANGE IN RESISTANCE - OHMS LINE, 210 MI. IN LENGTH

Fig. 3. Copper Cost of Offsetting Equipment Resistance.

of new equipment. Moreover, 40 other circuits would have shared the same benefit.

The following tables show the copper losses occasioned by employing repeating coils of various standard cable equivalent with No. 8 B. & S. G. wire on 210-mile circuit:

Repeating Coil Loss in Mile Equiv.	Area in C. M. of Equiv. Conduct.	Wt. per mi. per Wire, Pounds.	Total wt. of Line Wire, Pounds.	Excess wt. of Copper in Line. Pounds.	Total Cost of Copper in Line	Excess Cost at 15 Cts. per lb.
0.00	16,510	264	110,880	.....	$16,632	.....
0.35	17,000	272	114,240	3,360	17,136	$ 504
0.50	17,200	275	115,580	4,700	17,337	705
1.00	18,000	288	120,960	10.080	18,144	1,512
2.00	19,750	315	132,300	21,420	19,845	3,213
3.00	22,000	352	147,840	36,960	22,176	5,544
4.00	25,000	400	168,000	57,120	26,200	9,568
5.00	28,800	462	194,040	83,160	28,956	12,324

Miles Equivalent Repeating Coil.	Length of Line.	Loss per Mile New Conductor.	CM Equivalent Conductor.	Line Weight per Mile.	Excess wt. per Mile per Conductor.	Total Excess Weight.	Excess Cost at 15 cts.
1	25	0.045	20,400	326	161	8,060	$1,220
1	50	0.065	14,200	227	62	6,200	930
1	100	0.075	12,100	194	29	5,800	870
3	100	0.055	17,000	272	107	21,400	3,210
1	150	0.078	11,450	183	19	5,700	850
3	150	0.065	14,200	227	62	18,600	2,800
1	210	0.080	11,100	178	13	5,450	820
3	210	0.071	13,000	208	43	18,100	2,710

Circuits of No. 10 B. & S. G. Wire.

In these two tables and curves, Figs. 1 and 2, the almost inconsequential effect of increased electrostatic capacity and inductance, due to increased cross section of conductors, is not taken into account.

The weight of copper necessary and the cost of offsetting equipment resistance, such as heat coils, fuses, cords, etc., when applied to lines of Nos. 8 and 10 B. & S. G. copper, 210 miles in length, is shown in the following table and plotted curves in Fig. 3. This is bearing in mind that tinsel switchboard cords have a resistance of approximately one ohm; steel conductor cords 30 to 40 ohms; steel, copper-

wrapped, conductor cords, 0.4 to 1 ohm; and heat coils from 5 to 10 ohms or more each:

Gauge B. & S.	Resistance Added	Weight of Copper Added to Line to Offset.	Cost at 15 cents per pound
8	1	79.74	$ 11.96
10	1	31.5	4.73
8	5	399.95	59.98
10	5	158.00	23.07
8	10	801.00	121.50
10	10	316.00	47.40
8	20	1619.00	242.50
10	20	635.00	95.30
8	40	3280.00	492.00
10	40	1273.00	191.00
8	60	5000.00	750.00
10	60	1941.00	291.00
8	90	7660.00	1150.00
10	90	2945.00	442.00
8	120	10450.00	1570.00
10	120	3965.00	595.00
8	160	14400.00	2160.00
10	160	5850.00	878.00
8	200	18580.00	2785.00
10	200	6890.00	1034.00

In this table and curves, Fig. 3, the almost inconsequential effect of increased electrostatic capacity and indutance, due to increased cross section of conductors, is not considered.

(To be continued.)

Richmond Convention of Telephone Pioneers.

The fourth annual convention of the Telephone Pioneers of America, to be held in Richmond, Va., on October 29 and 30, will be no exception to the usual plan of having each gathering of the men and women who created and developed and have been engaged in the telephone business for 21 years or more, characterized by some special feature to add to the interest and pleasure of the occasion.

The convention will open on October 29 at the Jefferson Hotel, for registration of members and for the transaction of the business of the association. After luncheon there will be the reading of papers of special interest, and this will be followed in the evening by a banquet.

October 30 will be devoted to a steamer trip down the James river from Richmond to Old Point Comfort, starting at 9 a. m. Dinner will be had at the Chamberlain Hotel. After dinner there will be another steamer trip on the Potomac, arriving at Washington 7 a. m., October 31.

The banquet at the Jefferson Hotel, the trip on the James river, the dinner at Old Point Comfort, and the trip to Washington will be tendered to the members attending the convention by the American Telephone & Telegraph Co.

The sail down the historic James and up the Potomac not only will be full of interest, but afford a better way than has ever been given for Pioneers to meet one another, renew old associations and friendships and establish new ties.

It is expected that 300 or more Pioneers will attend this convention. All matters relating to reservations in Richmond should be taken up with J. W. Crews, vice-president of the Chesapeake & Potomac Telephone Co., Richmond, Va., chairman of the local committee.

New Safety Crusade Against Kite Flying.

Manager Chapman, of the Greensburg Telephone Co., Greensbury, Ind., has urged upon parents the need of a "safety first" movement to prevent children who fly flites from getting into entanglements with the company's wires.

Finding of Georgia Commission in Case at Columbus, Ga.

Decision Upholds the Rates of the Southern Bell Telephone & Telegraph Co.—Expenses Under "Going Concern Value," if Actual, Should Come Under Operating Expenses, and Not Be Used for Raising Rates—Payment to Parent Bell of 4½ Per Cent. Disapproved.

The Georgia Railroad Commission has issued an interesting decision denying the contentions of the city of Columbus, et al., in its complaint as to the rates of the Southern Bell Telephone & Telegraph Co. The commission holds that the present rates of the company are reasonable, but dismisses the appeal of the company for the inclusion of "going concern value" as a basis for rate making.

Prior to June, 1909, the Southern Bell Telephone & Telegraph Co. and the Columbus Automatic Telephone Co. each owned and operated a local telephone exchange in the city of Columbus. With the consent and approval of the mayor and council of the city of Columbus and of the commission, the Automatic company sold its property to and became merged into the Bell company. With its assent to and approval of the sale to the Bell company, the mayor and council agreed with the company that on and after Jan. 1, 1911, upon the installation of not fewer than 2,500 local stations connected with the Columbus exchange, a certain maximum schedule of rates for local exchange service should go into effect. This rate agreement was submitted to the commission, and the rates therein named approved June 10, 1909.

On September 30, 1912, the Bell company announced to the public that it then had more than 2,500 stations connected with its local exchange at Columbus, and that pursuant to the above-mentioned agreement and approval it would on November 1, 1912, put into effect a certain schedule of local exchange service rates, the charges subject to a discount of 50 cents per month, if payment be made in advance on or before the tenth day of the current month. Thereupon the mayor and council and numerous citizens of Columbus filed with the commission a complaint attacking the reasonableness of the proposed increased rates, and the efficiency of the service rendered by the company.

Upon the hearing the allegations of complainant as to the inefficiency of the service rendered were abandoned and the complaint only as to the reasonableness of the increased rates pressed.

The commission decided that in order to determine the reasonableness of the rates in question they must be considered from two viewpoints: First, as related to the value of the service to the public; second, as related to the fair value of the property devoted to the public service.

After consideration it was found the fair value of the Columbus property, including a fair pro rata of the toll investment located, used and useful in the public service at this time, and including $15,000 for working capital, was $450,000. The commission excluded from its valuation the following items claimed by the company:

1. Approximately $22,000 difference between the realized assets of the automatic company and the purchase price paid therefor.

2. The estimated theoretical cost of assembling expert

workmen from different places to construct the Columbus plant, assuming that there was no plant at Columbus and that a complete reproduction new of the actual plant was to be undertaken at once.

3. The estimated theoretical cost of assembling and training an expert operating force to take charge of a reproduction new of the actual plant at Columbus, assuming that such a plant was complete with 2,800 connected subscribers and must begin actual operations immediately under such assumed conditions.

Going Value.

The commission quotes its views in the Macon Railway & Light Co. case, and reiterates the conclusions therein, which were to the effect that such "going value" items as are an actual element of expense of attaching business should be included under operating expenses as incurred, but should not be added to physical property values as a basis for taxing the public perpetually to afford a return thereon. The decision then continues:

Counsel for the company insist that the same value must be attached to a property, for all purposes, and that there is no true distinction between "exchange value" and "fair value for ratemaking purposes."

By "exchange value" we mean that value which would be placed upon property and intangibles which go with it, when an owner parts with title thereto to another party. In such an exchange the owner really sells more than the property—he sells the *business* in *addition* to the *instrument* with which he carries on the business or performs the public service.

In ascertaining the "fair value" of a given property devoted to the public service, for the purpose of prescribing just and reasonable rates for the use of this property, as the *instrument* of such service, the public cannot, in equity be taxed to pay returns upon that which it contributes to the business—patronage. The private owner only furnishes the instrument of service, and it only represents his investment. If there be expense attached to its use in the public service, such "operating expenses" should have consideration under the rates prescribed, as operating expenses. The owner is not entitled to have such expenses concurrently returned with their incurring out of rates, and at the same time capitalized in part, as added value in investment.

For rate making purposes we hold that only the property used in the public service must be valued. For this valuation to be fair, relevant facts enhancing its value must be considered. If the property has an "attached business," it is doubtless, as property, more valuable than if it were idle. But we insist that it is the property that must be valued, not the attached business.

"Going value," or "going concern value" as related to a public utility may be fairly analogized to "good will" value as attached to a mercantile enterprise. In selling his store and stock of goods, the merchant would properly include in the price representing his idea of value what he believed to be the value of the attached business or "good will." If, however he was fixing a selling price on the commodities he was offering his customers, he would not attempt to fix such a price as would pay all operating expenses, provide for losses and depreciation, pay him a reasonable return on the entire capital invested, and in addition a return upon the value he attaches to the trade of his customers. The patronage of his friends may be valuable, but he cannot tax them for extending it, notwithstanding the fact that if he is going to part with his property and the business to another party, he may value it in the exchange.

What a public utility is entitled to is such compensation for *its services* as will afford a reasonable return upon the fair value of the instrument of service, as property, not upon the skill of users, nor upon the favor of the public. The act of rendering the service—the service itself must not be capitalized, though the cost of rendition must be paid by the public.

4½ Per Cent. Payment to Parent Company.

Speaking of the relations with the American Telephone & Telegraph Co., the commission said:

Included in the operating expenses of the company is an item of 4½ per cent. on gross income paid the American Telephone & Telegraph Co. for appliances furnished and services rendered by it to respondent. We disapprove of this percentage charge, and are satisfied that it should not be allowed in full. The American Telephone & Telegraph Co. owns the Southern Bell Telephone & Telegraph Co., as it does all the other Bell companies. Whatever earnings the subsidiary companies make, go to the parent company. The appliances furnished and the services rendered by it to its subsidiary companies are valuable, but in our opinion the subsidiary companies should only be charged the actual costs thereof. The American Telephone & Telegraph Co. should not make a profit in reality out of itself, at the expense of the public. Under its present practices it takes two bites out of the public apple, when, in good conscience, it is only entitled to one.

The American Telephone & Telegraph Co. cannot fairly demand two returns on the same property, or for the same service, which it clearly secures when it charges its subsidiary a profit and it in turn charges the public, and turns this over to the parent company in the form of a dividend.

As to employes' pension, disability benefit and insurance fund, the commission said:

We are also inclined to disallow as a proper charge to operating expenses, contributions by the company to the upkeep of an employes' sick benefit, disability, pension and insurance fund.

The desire of the company to make such provision for its employes is laudable and praiseworthy, but in the absence of a mandatory statute imposing on a public service corporation an obligation or duty to provide such a fund as a matter of public policy we question its right to voluntarily assume such an obligation and transfer the burden of it to the public under the guise of a charge for service rendered it.

We assume that such a practice is justified upon the grounds:

1. That because thereof more efficient, better satisfied and more interested employes can be secured and consequently the character of service to the public improved.

2. That dependent employes are less liable ultimately to become a charge upon the general public, and that it is more equitable that such a charge should be laid upon that portion of the public in whose service they were incapacitated.

As it appears to us, the first argument seems to ignore the fact that the public is entitled to efficient service; that it is the primary duty of the company to furnish such; that charges in the first instance are fixed upon the assumption that such service is being rendered and that the public can be charged no more than the service is worth, however laudable the purpose which might be back of any additional charge.

The second assumption, it seems to us, is wrong in principle, and if followed to its logical conclusion might result in immense burdens of indirect taxation, extending into every field of employment, imposed upon the public without its direct consent, and as to which it would be without voice, control or information.

It is not our purpose here to attempt any well-considered discussion of the questions raised in this practice of the company. In the present case, the proportionate amount chargeable to Columbus is not large, and its inclusion or exclusion does not materially affect the result.

We shall not, therefore, pass upon the question finally, but will leave it open for future discussion and decision.

Conclusions.

In our opinion, after careful revision of operating expenses and with a fair allowance for depreciation, all as indicated in the foregoing, this property now is earning nearly 7 per cent. net upon a valuation of $450,000, including working capital of $15,000.

In our opinion this return under the rates complained of is not unreasonable. We are further of the opinion that the service now being rendered the public at Columbus exchange is worth the net rentals charged and herein approved.

While we have not thought it proper to include anything on the subject in our order in this case, the commission is inclined to the opinion that the state-wide charge of $1.50 per month for desk or other extension telephones is high and that the company should take under consideration a reduction in this charge at all of its Georgia exchanges.

We disapprove of the manner of stating the rates in effect by the company, and the order accompanying this opinion will provide that the net rates now charged shall be the maximum rates to be charged.

The Rejuvenation of the Craneville Telephone Exchange

A Serial Story Telling How a Rundown Telephone Plant Was Rebuilt, Enlarged and Changed Successive.y from a Grounded to a Local Battery Metallic System and Later to Common Battery —Problems Encountered by Every Practical Telephone Man

By Paul Hamilton

"When is the doings?" Germany asked Frank one morning in the terminal house.

The money's all in sight, except yours," replied Frank.

"I mean about Kitty and the Doctor going overboard?"

"I guess you won't ever learn to talk United States," returned Frank. "Well, I can see just as far into a thing I

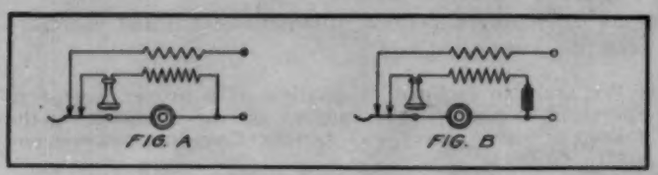


Fig. 146. Relation of Condenser and Receiver.

don't know anything about, as the next one. I inspected along Poplar street this morning and I heard seven different dates mentioned."

"I'm going to ask the boss if we can't go out of business until it's over," said Germany. "They all know Kitty and every house I go into, I have to answer some more questions."

"I wish the Doctor would make a few inspections," Frank replied and went on about his work.

Between working out the details of the P. B. X. installation and making up a statistical report or record of the inspections, Frank and Germany were making, Mr. Forster was kept pretty busily engaged so Frank's wish was not gratified. Mr. Barrows fully realized that if he left the Craneville exchange in the same hands in which he found it, it might relapse into its former neglected condition. While Frank and Germany followed his instructions explicitly, neither had grasped the fundamental idea of exchange management. He therefore exercised every care to develop the qualifications lacking in the Doctor's training. This was done with the full knowledge of Mr. Rankin, who agreed that young Forster must be the brains of the enterprise.

Frank also was aware of the situation to some extent, but was not aroused to jealousy, himself, being greatly bored at having to perform clerical work of any sort, beyond such brief notations as were necessary in the small book he carried in his pocket.

"Well," Mr. Barrows began, "as we are all here early tonight, we will clear up as much work as we can in order to get away early and let the Doctor get a good night's rest.

"I think we left off at the condenser in the receiver circuit. Leaving out the details of the circuit as we wire it in our sets, or rather bridging around them, we have this condition: In the first place, the current flow through the primary of the coil, is governed by the transmitter at the distant end. This sets up or induces a current in the secondary.

"Here (Fig. 146-*A*), I have omitted the condenser. This leaves an open path for direct current coming through the primary back through the receiver and secondary winding to the other side of the line, while there is also another path, through the hook and transmitter, the resistances are so nearly equal that the current would be divided, but that is not an essential point. With direct current flowing into the secondary, the induced alternating current is greatly interferred with; that is, its effect upon the magnets in the receiver is not as delicate as it should be. The rhythm of action of the diaphragm is lost because the magnetic power of the magnets is kept at a maximum, or nearly so, by the constant presence of battery in the magnet windings."

"But the voltage of the secondary circuit is higher?" the Doctor said, questioningly.

"Yes, that is true, but in the receiver it is not the voltage but the volume of current to be considered. We require but a small current flow, and in this case we have practically the same as we have at the transmitter. This makes the action of the diaphragm weak and uncertain because at intervals the reversals in the secondary winding are combative and nullifying.

"Now, when we insert the condenser in the secondary circuit (Fig. 146-*B*), we stop the flow of direct current. This builds up the current at the transmitter which, without the condenser, was weakened by about half. A high wound resistance coil would have the same effect as far as transmission goes, but it would deaden the receiver circuit.

"We know that a condenser is very sensitive to any change of current flow. It automatically keeps itself charged to the level of the circuit and its action is instantaneous. We cannot determine that there is any lag.

"Now let us analyze the conditions when we are listening. Consider the transmitter at rest, offering a fixed resistance only to the flow of the direct current from one side of the office battery, through the primary, and back to the other side of the battery. This current fluctuates in volume according to the words spoken into the distant transmitter. With the circuit closed and at rest, the condenser is charged to the level of the circuit.

"Now, when a variation takes place in the primary, the action of the induced current is alternating. At one instant it flows through the receiver into the transmitter circuit and, as a reversal occurs, it flows into the condenser, but does not pass through. It is retained there only the instant required for the current to reverse in the coil. Then the condenser discharges into the circuit through the receiver. This oscillating action of the condenser gives the receiver the delicate variations in reproducing the vibrations of the distant transmitter."

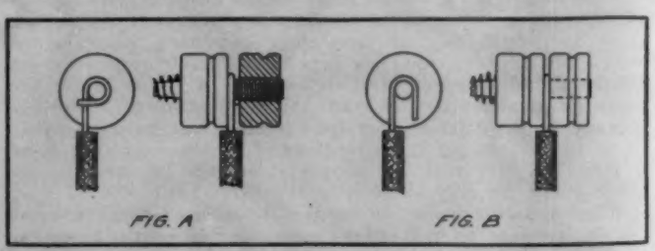


Fig. 147. Wrong and Right Ways to Attach Wires.

"But you can talk without a coil or condenser, either," objected Frank.

"We admit that. The vibrations can be reproduced but not with the same degree of accuracy. To secure the most efficient result is what we are aiming at."

"Then in truth we do not convey or conduct the sound from one point to another," was the Doctor's comment.

"No. That was the idea of the early experimenters. Connect two sounding boards with a string or wire and a tone can be carried, or conveyed from one to the other within certain limits. You see toy telephones at Christmas time made on this principle. The scope or limit, however, is too narrow for practical use."

"The condenser is in the party line instruments, too?" Frank inquired.

"Yes, in all our instruments that work common battery. I would take up the party line circuit but I wish to go over the inspection slips you have turned in and discuss the points referred to on the list I gave you. The first item is one which the change of instruments has nothing to do with.

"'Accessibility.' That refers to both the instrument and protector. It is well enough to observe if the instrument is located where it will be answered promptly. The protector should be placed where you can get to it easily.

"'Appearance' is important. This covers the condition of the wiring if exposed, and the instrument, viz.,if it is straight in the wall; if it is defaced in any manner; and if the wall around shows marks that might have been made by the installers."

"Well," said Frank. "Nearly all of the new instruments look bad. They are so much smaller than the old ones that the part of the wall covered by the old set, isn't covered at all now. Sometimes all four of the old screw holes show. I guess most of the people will have to paper the rooms over again. Some of them want to know if we are going to pay for it?"

"No! I guess we will have to leave that item up to them. Of course, where any damage results from the carelessness of the installers, it is a different matter."

"I haven't found any cases of that kind," said Frank.

"Nor me, either," remarked Germany.

"'Connections' refers to such connections as would be made in installing the instruments, presuming that the wiring of the set were O. K. from the factory. There is a chance for the wires being skinned too far back; being loose under the binding posts or wrapped the wrong way around the screws or posts."

"They seem to be in good shape so far as that goes, but on some of the posts, I have found the wires wrapped around several times. Do you want us to change such wiring?"

"I think I would, if I were you, for this reason: When the wires are wrapped more than one turn and bound down by a binding post, a loose connection, an open or a high resistance joint is, in many cases, the result.

"It is like this (Fig. 147-*A*). The main wire naturally lies

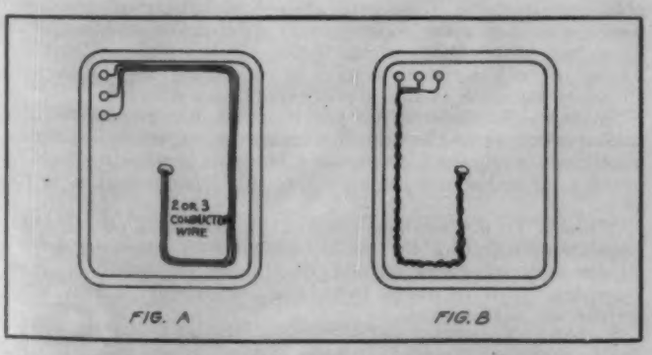


Fig. 148. Interior Wiring of Set or Signal Case.

next to the post. The second wrap comes around and must cross it here at *X*. Even if only the short end lays across the wire, the shoulder of the screw, or nut, will force the two together and cut into one or both. The nut rests upon but a small surface of the wire. By simply making a hook (Fig. 147-*B*) in the wire, we have this advantage: The shoulder of the screw or nut resting evenly upon the wire, eliminates, to a great extent, the chance of corrosion opening the contact.

"'Slack wire' is the next item. It means that an unnecessary amount of twisted pair, folded inside the instrument, is liable to interfere with the bell armature. Pencil coils are un-

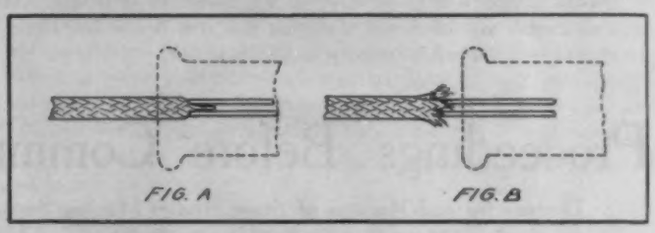


Fig. 149. Correct and Incorrect Method of Cutting Tie.

desirable. It requires time to make them up neatly and their effect is not beneficial, and a long spiral is detrimental, in fact. About six inches of slack wire is all that is necessary. It should be formed in loops around the case so as not to interfere with the bell armature or prevent an open view of the apparatus in the case.

"If, when you open a signal case, you find it necessary to push the wires aside in order to get a clear view, you are liable to loosen a connection or break a wire completely off. These faults are not so bad, if discovered, but you will find them too often overlooked, especially if you have to move the wires a second time to close the case, which occurs quite frequently.

"Another fault to the method of jamming slack wire into the case, is the difficulty of examining any particular wire. It is often necessary to remove all wires from the binding posts and separate them, in order to make a thorough examination for trouble. In practice I have found the most satisfactory method is like this (Fig. 148). It depends, of course, a little upon the arrangement of the apparatus which varies in different styles of instruments.

"The 'receiver', of course, is important to the action of the set. The binding post connections should be tight. The cord should be so tied that it will not bind against the sides of the shell when that part is put in place. As we know, the outside covering is braided out into a single strand. This tail is for the purpose of tying the cord securely to the receiver to relieve the conducting pair from strain. This should be tied short enough to accomplish this purpose without leaving enough slack in the pair to form knots and kinks and bind between the shell and magnets."

"In some of the receivers, the tail tie has been cut off and the two tip ends tied together," said Frank. "Shall we change those cords?"

"I noticed that in the reports you turned in. With some companies, it is the practice to attach the cords in that way, namely, by tying a square knot, using the tip ends, either at the base of the magnet or around a button inserted between the bars about half way up from the base. There is one fault to this—that of careless workmanship rather than of the method.

"If the tie is cut too close to its base, or where it is brought out in a single strand, the casing is quite liable to slip back through the receiver shell and become frayed, exposing the two inside cords like this (Fig. 149-*B*). By leaving about one-half or three-quarters of an inch of the tie (Fig. 149-*A*), it will not unbraid.

"Upon removing the receiver cap, dirt is the first thing to look for. In replacing the cap, be sure the diaphragm is not reversed. To prevent rust both sides are coated with a moisture-proof substance. The outside, being very much exposed, is covered with enamel and japan. The inside is lacquered lightly to avoid bringing any more insulating substance than possible between the iron of the diaphragm and the magnets. If the

lacquer or enamel is broken or defaced, replace the diaphragm. In placing the receiver on the hook, see that the hook forks are not open too wide and at the same time do not bind. Remove all knots and kinks from the cord. It is strange how the handling of a receiver will invariably twist the cord into all kinds of shapes.

"About all there is to be done to a transmitter is to see that all the screws are set firmly and that the arm is not too loose. It should be adjusted to remain in any position.

"In your inspections, I see you have found trouble of almost every class mentioned, and a few miscellaneous cases besides. When you have completed the inspection of all the instruments you should be able to keep up your maintenance at a nominal expense.

"In a day or so we will be ready to start on the Allied Industries' P. B. X. so if you have time, we will meet a little earlier tomorrow night to go over the circuit together."

(To be continued.)

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities and Actions of City Councils Bearing Upon Franchises, Rates and Service

The New Colorado Utilities Commission.

Governor Ammons of Colorado, recently completed the personnel of the Colorado Public Utilities Commission. Aaron P. Anderson was made chairman. The other appointments are Sheridan S. Kendall and George T. Bradley. These were the three members of the old railroad commission. John W. Flintham was appointed secretary of the commission.

In a statement issued by the new commission as to its powers, it is stated that every state in the Union with the exception of Delaware, West Virginia, Wyoming and Utah have commissions to regulate their utilities and that the Colorado law is patterned after the laws of Wisconsin and California. The commission is given power among other things to direct that physical connections and joint rates over two or more telephone lines be established in particular cases.

New Conference Ruling by Illinois Commission.

The Public Utilities Commission of Illinois has issued an order annulling the conference ruling No. 7, issued some time ago and promulgating a new conference ruling to be known as No. 14. The ruling has to do with changes in rates, charges, classifications and service by public utilities in the state. The provisions of the new ruling are as follows:

It is hereby ordered by the State Public Utilities Commission of Illinois that any change in any rate or other change or classifications or any rule, regulation, practice or contract relating to, or affecting any rate or other charge, classification or service, or any privilege or facility which does not result in any increase in any rate or other charge of any public utility, may be made and shall become effective 30 days after a schedule of the same shall have been filed with this commission and posted in accordance with the terms of Sections 33 and 34 on an act entitled "An act to provide for the regulation of public utilities," approved June 30, 1913, and effective January 1, 1914.

Any such change may be made and become effective within 30 days after the filing of any schedule by any public utility whenever the commission shall so provide, by an order specifying (1) the change or changes to be made and (2) the time when the same shall take effect, and (3) the manner in which they shall be filed and published.

Any change made by a public utility in its regular rates, charges and classifications for service, since July 1, 1913, whereby the rates, charges or classifications exceed those in effect on said date, are illegal unless the same have been consented to by this commission and in case any public utility has made a change in any rate, charge or classification whereby the same exceeds the regular rate, charge or classification of such utility in force on July 1, 1913, such public utility is ordered and directed to return to the regular rate, charge or classification (but not to any discriminatory rate, charge or classification) which was in effect on July 1, 1913, and to continue such regular rate, charge and classification in force until this commission shall have given its consent to increase the same.

When any rate or other shall be increased, or whenever any classification, contract, practice, rule or regulation shall be so changed as to result in any increase in any rate or other charge of any public utility, the same shall not become effective until it shall have been approved by this commission.

When any rate, charge or classification of any public utility in effect on July 1, 1913, is discriminatory, such public utility must forthwith abandon such discriminatory rate, charge or classification and hereafter conform to the provisions of an act entitled "An act to provide for the regulation of public utilities," approved June 30, 1913, and effective January 1, 1914, and particularly to Sections 37, 38 and 39 of Article IV of said act.

Where any public utility doing business in this state is required by the terms of any franchise ordinance granted to it by a municipality to furnish service to such municipality in consideration of its franchise, such public utility shall observe such franchise requirements until otherwise ordered by this commission. This commission reserves the right to inquire into the reasonableness and sufficiency of any such franchise requirement and to disregard the same whenever the rates and charges of any such public utility shall be hereafter considered and determined by this commission.

Chicago City Telephone Bureau Reorganized.

The Telephone Bureau of the city of Chicago was recently reorganized under the direction of City Telephone Supervisor G. W. Cummings, who took charge of it August 21. This bureau enjoys the distinction of being the first of its kind in the country, its duties being defined by city ordinance as follows:

First: To receive and examine the grounds of all reasonable complaints in respect to alleged violations of any ordinance authorizing the construction, maintenance and operation of a line of telephone wires in the city of Chicago, and the taking of such action in respect to complaints for the purpose of adjusting same as the circumstances may warrant.

Second: To enforce the provisions of all laws, ordinances and resolutions of the city of Chicago in respect to apparatus, appliances, equipment, classes and kinds of service, methods of service, operation and rates relating to telephone service in the city.

Third: To procure and keep on file copies of all rules and regulations affecting the public, applying to telephone service in the city of Chicago, and the taking of specified action regarding such of these rules and regulations as may seem unjust or unreasonable.

Fourth: To collect and compile information and data relating to matters connected with the furnishing of telephone service in Chicago and other cities.

Fifth: To submit monthly and annually, reports to the city council.

The bureau is really a disinterested third party to whom dissatisfied telephone subscribers may appeal in any matters pertaining to telephone service in the city whether the point in dispute be poor service, overcharge of metered service, dila-

tory action in supplying service to new subscribers, poles and wires to be moved or similar complaints. The assumption is that one lone subscriber will get more prompt and satisfactory action in a dispute with a large corporation if supported by a city department representing the telephone users as a whole.

That this assumption is well founded is evidenced by the number of concessions secured from the Chicago Telephone Co. through the efforts of the bureau. Among these was the reduction of the moving charge from $5 flat in all cases, to the actual cost of work done not exceeding $5. Thus a subscriber may get an instrument moved for $1 if not much work is involved. By this one item, thousands of dollars are saved annually to the telephone subscribers of the city.

The reorganization of the bureau was celebrated by an informal Dutch lunch attended by its members, Monday, September 21. Ways and means for bringing this department of public service to the highest possible efficiency, were discussed. The good fellowship established between the members of the bureau is reflected in the slogan adopted at this gathering: "I ain't mad at nobody."

Decision Awaited in Illinois Discrimination Case.

Judge Creighton of the Sangamon County circuit court at Springfield, Ill., is expected to shortly render a decision in the case of rates charged by the National Telephone & Electric Co., of Clinton, Ill. The state utilities commission twice ruled that the company should charge stockholders the same rate as that charged other subscribers. An appeal was taken to the Sangamon County court by the mayor of Clinton and 80 other customers who enjoyed a 33 1/3 per cent. reduction. The case is now under advisement.

New York Commission Upholds Uniform Equipment.

The New York Public Service Commission has decided that telephone companies cannot be compelled to furnish service to patrons who use telephone equipment other than that supplied by the company.

The decision is in the long standing complaint of the state agricultural and industrial school at Industry, N. Y. This complaint was filed in 1910 and asked that the New York Telephone Co. be compelled to furnish connections with the private switchboard erected and maintained within the institution.

Commissioner Frank Irvine has now written an opinion on which the commission decides the case. He holds that the public necessity, represented by efficient telephone service takes precedence over the private convenience, even of a public institution which might demand the service asked in the complaint.

"The question must be viewed not solely as one between the telephone company, on the one side, and the individual subscriber seeking private ownership, on the other," says Commissioner Irvine in his opinion. "The individual subscriber is not the only one interested in his telephone equipment. Every subscriber is interested in the entire service, including the equipment of every other subscriber with whom he has occasion to communicate. The best equipment at one station is of no avail if communication is prevented by defective equipment at the other end of the line. All telephone users, which means practically the entire public, are concerned with the efficiency of the telephone service as a whole.

"The public has a right to generally efficient telephone service and it has a right to look to the telephone company for such service and to hold it responsible therefor. Generally efficient telephone service, we believe, would be impossible if subscribers generally owned their own station equipment, buying such as they saw fit and maintaining it as best they could. All responsibility on the part of the telephone company would cease as a practical matter if it maintained only its central offices with wires leading to private installations not of its selection and not under its control. A system of private ownership or a practice permitting subscribers at their will to install private systems would certainly lead to great deterioration, if not demoralization of the service."

The opinion mentions the contentions of the telephone company that if it owns and controls all instruments it can be held responsible for their maintenance and quick repair through its possession of so large a number of standardized units, whereas were subscribers allowed to furnish their own equipment they might be influenced to purchase cheaper and less efficient ones, possibly injuring the whole system, and certainly less convenient for the subscriber himself to have repaired when out of order.

Hearing on St. Louis Rates Completed.

The hearing upon the application of the Southwestern Telegraph & Telephone Co. for permission to increase rates upon certain types of service in St. Louis to give it $157,000 additional net revenue, was concluded recently after a three-day hearing before the Missouri Public Service Commission. The decision probably will not be announced for several weeks.

M. V. Downing, division superintendent of the Bell Company in St. Louis, testified that the average monthly operating expenses this year have exceeded those of 1913 by approximately $6,500 per month.

K. W. Watterson of New York, chief plant engineer of the American Telephone & Telegraph Co., told of the relations existing between the A. T. & T. and subsidiary companies. Standardizing apparatus, he said, had been of vast benefit to the companies associated with the A. T. & T. Co., enabling them to give better service and at less cost. The 4½ per cent. of gross earnings of associated corporations paid to the A. T. & T. Co., for rentals, services, etc., he said, did not more than pay for the manufacture of instruments and appliances and the expenses of the general staff in rendering managerial and other services. The amount paid to the parent company last year for rentals, service, etc., was $95,000.

At the hearing, it appeared that the fact that the Kinloch Telephone Company, the Independent Company in the St. Louis territory, charges lower rates and yet admits it is earning a fair return upon its investment, is one of the strong obstacles against the allowance of the rate increase asked by the Bell company. The officials of the latter stated that the Kinloch earned money because it picked the cream of business and did not attempt to operate in unprofitable territory.

Denver Case to Supreme Court.

The Mountain States Telephone & Telegraph Co. has filed with the Colorado supreme court an abstract of the record of the case in the Denver district court in which the company was ordered by Judge Denison to vacate the streets and alleys of the city. Written arguments must now be filed in the appeal of the company before oral arguments can be heard and the court can take the suit under advisement for a final decision.

Summary of State Commission Hearings and Rulings.

CALIFORNIA.

September 1: Decision granting the Lindsay Home Telephone & Telegraph Co., of Lindsay, Tulare County, authority to issue a promissory note of the face value of $2,000 for a term not exceeding 5 years.

September 11: The Hughson Telephone Co., operating in Hughson, Stanislaus County, has filed an application with the Railroad Commission asking authority to issue 5,000 shares of common stock at $1 per share.

September 15: Complaint by city of Redding, Shasta County, relative to the rates of the Pacific Telephone & Telegraph Co.

GEORGIA.

Decision denying the contentions of the city of Columbus, et al., as to the rates of the Southern Bell Telephone & Telegraph Co., and upholding those rates as reasonable.

ILLINOIS.

September: Order annulling conference ruling No. 7 issued some time ago, and promulgating conference ruling No. 14. The new ruling relates to changes in rates, charges, classifications and service by public utilities in the state.

September: The following companies have been ordered to discontinue rates which discriminate in favor of stockholders or others: Jasper County Mutual Telephone Co., Newton; Moultenville, Hamel & Fruit Telephone Co., Hamel; Industry Telephone Co., Industry; Rushville, Pleasant View & Browning Mutual Telephone Co., Frederick; Herrick Limited Telephone Co., Herrick; North Grove Telephone Association, Summerfield; Shiloh Valley Telephone Co., Belleville; Mason Rural Telephone Co., Mason; Riverton Independent Telephone Co., Riverton; Shannon Telephone Co., Shannon; Simpson Mutual Telephone Co., Rock; Heyworth Telephone Co., Heyworth; Greenup Telephone Co., Greenup; Bureau County Independent Telephone Co., Automatic Home Telephone Co., Pontiac.

September 11: Central Union Telephone Co. and the Empire Telephone Co., of Bradford, were given permission to operate their lines in connection with each other.

September 11: Central Union Telephone Co., and Trivola Independent Telephone Co., of Trivola, given permission to operate their lines in connection with each other.

September 11: Contract between Crescent Telephone Co., of Joslyn, and the Port Byron Telephone Co., approved.

September 17: Fayette Home Telephone Co., Fayette, given permission to increase its rates at St. Elmo, Logootee and Laclede as follows: Rural and village business telephone from 75 cents to $1.50; rural and village residence telephone from 75 cents to $1; switching charge for rural service from $1 to $3.

September 17: The petition of the Postal Telegraph-Cable Co., of Chicago, to compel the Chicago Telephone Co., to install 11 pairs of wires for a telegraph and call box service was dismissed, the commission finding that the respondent company could not install the wires without injury to its other service. The commission found that the respondent company was not discriminating against the plaintiff as charged in the petition.

INDIANA.

September 14: Hearing at Bedford on complaint of the Shoals, Indian Springs & Bradford Telephone Co., of Williams, Ind., against the Central Union Telephone Co. for discontinuing physical connection at Williams. Owing to the absence of one of the Bell company's officials, it was decided to appoint a committee from each of the telephone companies and that they could reach an agreement. The Central Union offered to provide free service from Williams until some definite understanding could be arranged.

MICHIGAN.

September 16: Application by Dr. Perry Schurtz for physical connection and interchange of service between the Citizens Telephone Co., of Grand Rapids, and the Michigan State Telephone Co.

MISSOURI.

September 17: Hearing at Crane, Mo., by one member of the commission, in the following cases:

Case 38, Crane Telephone Co. vs. Barry Mutual Telephone Co., wherein complaint was made that the mutual company was discriminating in the matter of rates charged.

Case 459, the application of the Crane Telephone Co. to increase rates.

September 18: Postponement of hearing respecting the differences between the Kansas City Home Telephone Co., and the Liberty Telephone Co., of Liberty, Kan., over the establishment of an exchange in North Kansas City. The commission was informed that the companies expected to reach an agreement.

September 21: Hearing held at Jefferson City at which were presented the arguments of the Farmers Telephone Co., of Harrison County, for permission to operate an exchange at Brimson, Mo.

September 21: Hearing held at Jefferson City in cases 109, 187 and 372 at which were heard arguments of the Southwestern Telegraph & Telephone Co. for a rate increase at Caruthersville.

September 22: Hearing held at Jefferson City, in case 452, the Farmers & Merchants Telephone Co., of Monroe City, vs. the C. B. & Q. R. R. Co. and the Southwestern Telegraph & Telephone Co. requesting authority for the installation of a telephone of the competing company in the depot at Monroe City.

September 30: Further hearing will be held in Jefferson City, Mo., in the case of B. Simms and others against the Columbia Telephone Co., of Columbia, Mo.

NEBRASKA.

September 15: Hearing at Lincoln on petition of the Clay County Rural Telephone Co. for free service to Hastings to satisfy the demands of its subscribers at Glenville and a group of farmers.

NEW YORK.

September 15: A further step in the purchase of small telephone companies in the Adirondacks by the Long Lake Telephone Co., hitherto authorized by the New York Public Service Commission, has been taken in the authorization by that body of an issue of $10,000 of the capital stock of the Long Lake corporation. The stock is to be sold for not less than par and the proceeds are to be used for the purchase and improvement of the line of Timothy D. Sullivan for $7,395; $600 for the purchase of the lines of E. C. Potter; $500 for the purchase of an automobile truck; and $1,605 for the erection of the company's reposed line from South Pond to Blue Mountain.

September 20: Order holding that telephone companies cannot be compelled to furnish service to patrons who use telephone equipment other than that supplied by the company.

NEW YORK.

September 30: Hearing at New York City in investigation as to appraisal and rates of the New York Telephone Co., the hearing having been postponed from September 22.

OHIO.

September 16: Order authorizing the Central District Telephone Co., of Pittsburgh, Pa., and the Harrison & Jefferson Telephone Co., of Cadiz, Harrison County, Ohio, to establish physical connection.

September 18: Order authorizing the Somerset Telephone Co., of Somerset, Ohio, to lease its property to the Newark Telephone Co. at a rental of six per cent. per annum on a valuation of $22,000, the later company assuming an indebtedness of $3,000 now owing by the Somerset company.

SOUTH DAKOTA.

In a hearing at Wasta, in which the Rapid Valley, Elem Springs and Wasta, Lake Flat Mutual, Red Owl Electric and Homestead telephone companies, all working in contiguous territory, were concerned, the commission demanded the remedying of the privilege of free telephone service to stockholders, and complaints as to switching charges. The rule was applied that any agreement between telephone companies as to service or rates must be in writing and filed with the commission before it shall become effective, this policy to prevent disputes between companies as to what their agreements of exchange of service or regulations really should be.

WASHINGTON.

September 12: Hearing held at Spokane as to the rates of the Newport Telephone Co., of Newport, Wash.

September 14: Order requiring the Pacific Telephone & Telegraph Co., to provide exchange service for rural company lines serving the district between Spokane and Medical Lake, on the same basis, it is said, that other rural systems have been handled. It is estimated that this order will involve an expenditure of between $10,000 and $15,000 but the commission believes that the prospects for increased business in the district affected will more than justify the investment on the part of the company.

October 5: Hearing at Seattle on protest of residents of Phinney Avenue against "Ballard" designations in the telephone directory.

October 6: Hearing at Seattle on a protest as to the Everett-Seattle toll rates of the Pacific Telephone & Telegraph Co.

WISCONSIN.

September 21: Order dismissing the application of the Diamond Grove Telephone Co., operating in the vicinity of Mineral Point, Wisconsin., for a connection with the Mineral Point, Telephone Co. The decision notes that the Diamond Grove company has not complied with a previous requirement of the commission, and that until it does so physical connection would not be feasible.

September 21: In the matter of the application of the Mineral Point Telephone Co. for authority to increase its rates, the commission says that the facts presented to it do not warrant an increase at this time. The commission suggests, however, that if the company will keep its books and records in proper shape the matter may be reviewed again.

Practical Subjects—Letters and Discussions

A Kansas Manager's View of Farmers' Mutuals.

I have read with interest the contribution, "Away from the City," in last week's issue of TELEPHONY. It hits the spot in my community. We are working under a flat rate of $12 for any service required, including extension subscriber sets, bells and special sets as many as the subscriber wants. Yet we are forced to listen, several times a day, about the money the telephone company is making and the "terrible cost" of keeping a telephone in the house.

These people are not good kickers or payers either. They say they will pay in time, so "What's time to a hog?" (meaning the company). Perhaps if we had less agitation from the manufacturer to the farmers about building their own lines and getting "cheap service" we, as telephone men, would not have so much trouble with the mutual companies.

The reader of the manufacturers' printed matter gets the impression that all he needs are tools, material and a stout back and that he can equal any experienced and educated man in building, installing and maintaining a line, regardless of any local or general conditions.

A farmer gets the "cheap telephone bug" roosting under his hat and he immediately starts out to "infect" his neighbors. He then writes to some telephone manufacturer who proceeds to feed the "bug" in order to sell his apparatus. If the manufacturer would inquire into conditions and offer to help the local manager out, he would sell more apparatus and generally get cash for it. The average local manager can hardly take care of a well manufacturer-fed "bug" without some outside help. And who is better situated to give this help than the manufacturer?

Let the manufacturers read and ponder. If we are to successfully combat—shall I say the evil?—we will have to get it from all sides. Let's hear from others on this subject.

R. S. Parsons, general manager,
Kincaid, Kans. Eastern Kansas Telephone Co.

A Short Cut in Cable Installation.

TELEPHONY's readers may be interested in a way of putting up light cable, where circumstances permit, in a rapid and economical manner.

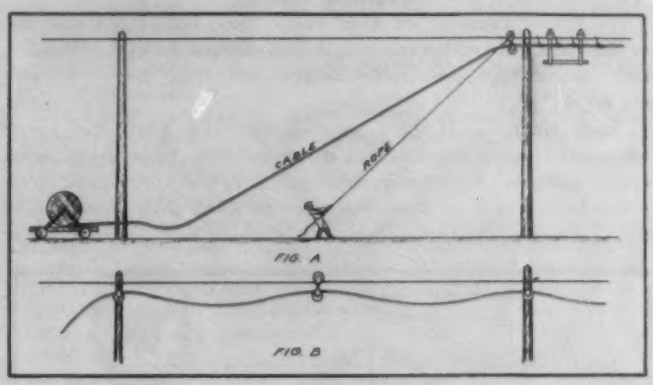
We fastened one end of the cable to the can pole. The cable, which we had loaded onto a low truck trailed behind our automobile, was then hauled along the line of poles on which it was to hang. We let it pay out along the ground for the entire length of 850 feet, which was the distance we experimented with, reversing the usual order of things by pulling the reel away from the cable instead of pulling the cable away from the reel. The size of the cable was 25 pair.

When the cable was all out, we put one man on the pole in a cable car to tie in, and had one man pull on a rope to which was attached two, single block hay fork pulleys—one running on top of the messenger and the cable running through the other, the two being fastened together by a couple of feet of wire. As the man pulled on the rope, the blocks sliding forward on the messenger, brought the cable up in under where it was easily tied in. The blocks being five inches in diameter, there was no danger of the cable bending too sharply.

While we were tying in behind, that portion which extended across the street, which we had to pass, was kept out of the way of teams by suspending it on block pulleys at the poles on either side. A single block was tied to the messenger at one pole with the cable running through it. The block, when pulled to the middle of the span, left the cable free to roll either way without pinching.

The results were all that we hoped for, and more, as we put up the entire 850 feet in one afternoon and tied in permanently all but two spans. These spans were tied in temporarily several feet apart to keep it up out of the way, as we saw we could not finish in time for supper; and the fact that our lineman has a half interest in a girl, made it imperative that he be elsewhere when the films began to roll, it being Saturday night.

I have put up quite a bit of cable in my time, but never put up a piece that was hung in better shape. Not a scratch nor kink was in it the whole length which proved to me that light cable can be put up in this manner with good results.



Putting Up Light Cable and Crossing Street.

Instead of having nine men—one for each pole and some to pull—we did the pulling with the automobile and two men did the work, or rather a man and a 14-year old boy, the boy pulling the rope. The labor, aside from the cost of supervision, was $1.20 for lineman and 60 cents for the boy.

The accompanying sketches show the two methods used, Fig. *A* the method of bringing the cable up to the messenger, and Fig. *B* the method of crossing the street.

Hutchison, Minn. W. S. Clay.

A Word from the Independent Field.

A recent decree of the United States court is the result of another stepping stone towards the Independent telephone field, and we find ourselves in a larger field. We now have the advantage of additional long distance service and it is possible for our subscribers to talk direct from their telephones to every Home and Pacific telephone in Portland and elsewhere at the regular rates.

The Pacific Telephone & Telegraph Co. was ordered to carry out a contract providing for trunk lines between its long distance toll boards and the long distance toll boards of the Home Telephone Co., together with similar trunks extending from the local boards of both companies to the Northwestern Long Distance Telephone Co.'s lines, whereby patrons of both companies can have the use of the Independent long distance service if they desire it. These intercommunicating connections are ordered at every point where competition exists.

We are connected direct with the Portland via four toll lines through the Pacific company's territory, but the decision, as stated, enables us to connect with the territory of both companies, which we find a great advantage.

Our exchange is located in Gresham, our territory covers several miles in this, Multnomah, and Clackamas counties, consisting of about 900 miles of wire. We connect direct our subscribers from the following towns and localities: Troutdale, Bull Run, Fairview, Cottrell, Pleasant Home, Boring, Sandy, Linnamann, Rockwood, Orient, Powell Valley, and Terry with about 550 or 600 subscribers. We connect with Corbett and Damascas, Oregon. With these connections, our exchange handles about 800 subscribers. Our territory reaches

to within about five miles of Portland city limits. On account of increase in business, we have just constructed new circuits to Sandy and Cottrell at a cost of about $500. With extension and new construction, we have expended for the summer work about $2,700.

In my opinion, Independent telephony in the Northwest will be one of the greatest utilities if the Bell "Universal Service" is continued to be gone into.

Gresham, Oregon. T. C. Blank, Secy.-Mgr.,
Multnomah & Clackamas County Mutual Telephone Co.

Tagging Cable.

The helper came in an hour late. "Say, Bill, I got tied up on the cars," he said, removing his mackinaw hastily. "What! You haven't got that cable tagged out, have you? How'd you do it?"

"Easy enough. Helpers have a habit of being late just when a fellow needs them most, so we have figured out how to get along without 'em."

The helper said no more but went to work with unusual energy. During the noon hour after they had finished their

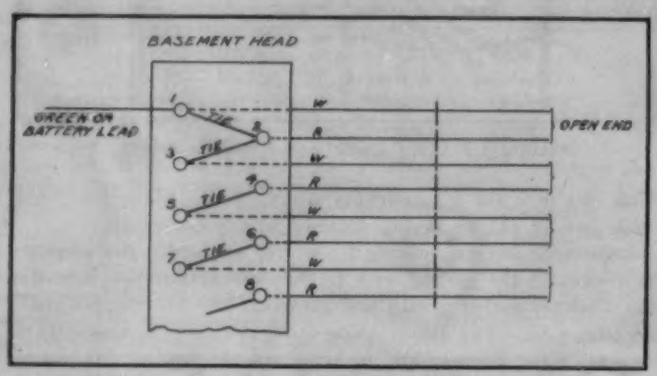


Diagram Showing Method of Cable Testing.

lunches and were waiting for the whistle, he asked again:

"Say, Bill, tell me how you tested that cable. I can't figure out a way to do it from one end."

"I'll tell you, boy. It's a trick worth knowing, even if it is as easy as pulling tacks. To begin with, you remember you connected the whole 50 pairs in the basement yesterday. When I concluded you had overslept, I went ahead in this manner:

"First, I tied the binding post together like this: 1 and 2 and 3; then 4 to 5 and 6 to 7, and so on. You see, with the exception of 1 and 2, I had the even or red of one pair tied to the odd or white of the next.

"At the open end, I put my head set to ground and picked up the first three wires. Now by twisting the ends of number 3 and its mate together, I could go ahead and 'feel out' number 5, the white of the next pair. Tying it to its mate, I could get the odd of the next pair and so on, on through the whole cable. I can do it that way about as quick as if I had a helper."

"What if you had to use dry cells?"

"Then I would connect the cells across the first pair and not tie them at the head. Well, there's the whistle."

Chicago. P. H.

Opposition to Report on Inductive Interference.

At the recent Pacific Coast meeting of the American Institute of Electrical Engineers at Spokane, Wash., the "Report on Inductive Interference," by the joint committee to the California Railroad Commission, was read by L. P. Ferris, assistant engineer in charge.

The discussion was opened by P. N. Nunn, who expressed the feeling of the power companies that the report is vicious and unjust. Mr. Nunn made a cutting analysis and caustic comment regarding each requirement, declaring that the burden of correction is laid upon the power companies. He said it was a box subtly designed to trap the power companies with the back door left open for the telephone company to get in and out at will. Some of the provisions, he said, involved an expense so great as practically to prohibit operation in many cases. He said the attempt of organized telephone interests to "put this over" on the power companies would make what had been a local question in California a national controversy. He denounced it as a "Bell scheme" opposed to the power interests of the country.

J. B. Fisken brought forth several absurdities which would result, he said, from the practical application of the provisions of this measure. A. H. Halloran suggested that the power companies had frequently been an aggressor, that the telephone companies had spent thousands of dollars in vainly trying to devise physical protection and that their plight was worthy of fair consideration.

A communicated discussion was read from A. J. Bowie, who showed that the prohibition of the airbrake switch would greatly increase costs to the power companies. He also presented facts and oscillographs tending to prove that air-break switches caused less severe disturbances than oil switches. He concluded with a request that more experiments should be undertaken so that this prohibition might be based upon something more substantial than a "commonly recognized fact."

George S. Humphrey quoted the action of the N. E. L. A. at its recent convention whereby the provisions as to overhead crossings had practically been abrogated. J. C. Martin questioned the 5,000-volt limitation in view of the operation of many 6,000-volt distributing lines which are not known to be causing trouble. L. J. Corbett believed that a better term than "residual" could have been employed. L. T. Merwin characterized the paper as an insult to the power companies and demonstrated how he had eliminated all trouble on telephone lines by neutralizing the effects of power circuits by means of reactances and condensers at the telephone instrument, which was equipped with a high power transmitter.

L. P. Ferris, in closing the discussion made no attempt to defend the report against the caustic criticism which it had received and merely discussed the meaning of some of the definitions.

Inconsistencies in American Telephone Practice.

Congratulations to "Constructive Critic." He is saying just what I have wanted to say for a long time, but never felt that I was quite sufficient authority to take the stand.

Uncle Dick.

European Stockholders of Bell Company.

Of the total of 57,639 stockholders registered on the books of the American Telephone & Telegraph Co. as of June 30, 1914, it is stated that 881 were European, with holdings amounting to $12,479,900 of a total outstanding stock of $344,672,300. A year previous the number of European stockholders was 772, with holdings aggregating $11,861,500.

Improvements at Lafayette, Ind.

The Lafayette Telephone Co., of Lafayette, Ind., will, on October 1, sell $20,000 of stock, recently authorized by the Public Service Commission, and use the proceeds to put in additional cables. It is proposed to give every residence subscriber the choice of individual line service at $1.50 per month or party line service at $1 per month. The latter rate will be a reduction of 25 cents per month for party line service. A total of $30,000 will be expended by the company within a year's time, it is stated.

Public Relations of Utilities in Theory and Practice

"The Public Be Benefited!—Persuade the Public It Is Being Benefited!"—Conditions Which Afford Encouragement As to the Direction of Public Sentiment—Bringing Matters to the Public's Attention—Efficiency of the Management of Utilities.

By Public Relations Engineer

It is well to devote a reasonable portion of one's time and attention to those circumstances and conditions which afford encouragement. An optimist of the best sort looks every fact squarely in the face. Encouraging facts or factors are fully as important as those which tend in the other direction.

From our childhood we have been taught that straws show which way the wind is blowing. Let us endeavor to catch a glimpse of some of the straws that are passing before us at this time.

Straws Indicating Direction of Public Sentiment.

It is well known that in most of the large cities of our country, some of the "city fathers" have been leading an agitation for a reduction of the rate charged for the service of one or more of the public utilities. In one such city, in the past two or three years, a strenuous effort has been made to secure a reduction of rates for utility service. The effort has been accompanied by the usual agitation for public ownership. But the head of the city's administration is quoted in the public press as having officially declared on a recent date: "We cannot issue bonds (for the proposed purchase of the utility plant) with an interest rate of 7 per cent or more. And that is what we would have to do if we expect to sell them. Even then we might not be able to find a buyer for the certificates."

Another one of the "city fathers" said: "The proposal to purchase the plant looks to me like an effort to aid the company in getting an elephant off its hands."

In the newspaper report of the proceedings of the city's administrators, the head of the administration was quoted as saying: "The present plant is not up to date. It is not capable of supplying service at the minimum cost."

Why Not Bring Important Matters Before the Public?

The author has repeatedly suggested that a part of each utility company's publicity expenditures should be used to provide prizes for the best essays written in answer to such questions as are here suggested.

In view of the points brought out in the foregoing quotations, it ought to prove beneficial to have important matters of this sort brought to the attention of the public. For instance, those who with their private property, began rendering a public service 10 or 20 years ago, should not now be made to suffer because they did not know from the beginning, or did not provide from the beginning, a plant which would be up to date at this time. It cannot be rightfully assumed that the blame for the out-of-date plant should rest upon those who constructed it 10 or 20 years ago. It cannot be rightfully assumed that the expense of bringing such a plant to an up-to-date condition, should be paid out of the pockets of those who constructed it 10 or 20 years ago.

It ought to be possible to convince the public that this difficulty of an existing plant growing out of date as time passes, is a reality—a reality that is seldom if ever mentioned by those who are interfering with, or unsympathetically criticising our present utility practices.

It is not possible to foresee the city's growth nor the technical changes which may revolutionize the industry. With the exception of sewer and water systems, all utilities are of recent origin and consequently subject to rapid change. Within a generation horses have given away to cables and these in turn to electricity, as the motive power of street railways.

Within a decade "central energy" has displaced the dry-battery telephone; the "flash light" has supplanted the "drop" switchboard.

In electric generation and transmission, the rate of obsolescence is so rapid that the inventor's triumphs of ten years ago are now museum exhibits. No businesses, probably, are more immediately or more profoundly affected by the progress of invention.

The exceptions to the rule of private operation are water and sewer systems. These undertakings demand less of technical expertness and business judgment than most public utilities, and the physical operations concerned are relatively simple. The water plant and the sewer plant is comparatively very durable and the rate of obsolescence exceptionally low.—E. H. Downey, in "Regulation of Urban Utilities in Iowa."

Risk and Expense of Rising Rate of Interest.

Here we have the official representative of one of the most peaceable and most prosperous portions of the most peaceful and most prosperous nation on earth, saying that in his opinion, it would require an interest rate of not less than 7 per cent. to secure credit or cash with which to buy or to build a publicly-owned utility plant; saying also, that he is doubtful as to the city's ability to dispose of bonds, even at that high rate of interest.

Should not an effort be made to help the public to see as clearly as possible that this rise in the rate of interest was a risk which was actually taken by those individuals who purchased the property and paid for the labor that was built into every existing utility plant? Should not something be done to lead the public to see as plainly as possible the fact that the persistently prophesied European war was a risk which had to be taken by those individuals whose personal talent and time, as well as their private treasure, were built into every privately owned utility plant that was constructed 10, 20 or more years ago?

Ways of Bonding for Building of Utilities.

It might be well to impress upon the public at this time certain points which have been brought out by E. H. Downey, the author, as aforementioned, of "Regulation of Urban Utilities in Iowa," who said:

"The constitutional debt limit (of cities in Iowa) should be so amended as not to apply to any obligation that is secured only by lien against revenue-producing municipal property. Debts of this character impose no additional burden upon the taxpayers and create no charge upon the ordinary revenues or taxpayers of the city."

Reference is made to the language last quoted for the reason it indicates most forcibly the fact that it is possible to follow either of two widely differing general principles for the raising of funds with which to build or buy public utilities.

First, the policy which, according to Mr. Downey is required by the constitution of the state of Iowa. The policy of placing all of the property of the municipality and all of the taxing power of the municipality beneath and behind the bonds, as security for the money that is bor-

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rowed. This means, of course, that if from mismanagement, advancement in the art causing the property to grow "out of date," sleet storms, the shifting of population or from other causes, the publicly-owned utility fails to collect enough from the service it renders to pay the interest and principal of its bonds, the bondholder will still be secured. The bondholders will be secure because, under this plan all the risk of the utility undertaking rests not upon the shoulders of the men who loan the money by purchasing the bonds, not upon the people who use the service that is supplied by the utility, nor even upon those who manage or administer the business of the utility. Under this plan the actual cost of all the risks of the utility undertaking must be met by the taxpayers of the city, county, state or nation that issue the bonds for the purchase of the utility property.

We would not enter into an argument either for or against this principle, policy or practice. It seems proper, however, to remark that it is the direct opposite of the theory behind a certain kind of legislation which seems to have grown in public favor during recent years. It seems to be diametrically opposed to those who assume that liability for the personal injury of men engaged in an industry should be borne by the industry rather than by the public at large.

The second principle, policy or practice is that which is recommended in the language quoted from Mr. Downey's book. In harmony with the assumption that an industry should be made to bear all the expenses of personal injury to the individuals it employs, Mr. Downey recommends that the publicly-owned plant should be mortgaged to its security holders in exactly the same fashion as a privately owned utility plant. He would not have the general property, nor the general taxpayers of the city, county, state or nation, made responsible for one penny of the bonds.

It is plain, of course, that this would make a much more definite and interesting relationship between the purchaser of the bonds, the manager of the plant and the user of the service. But would it not be more difficult to find buyers for this kind of bonds?

Would it not be beneficial to the public to have such matters as these widely differing possible practices discussed until they are more generally understood? Would not the diverting of public attention to these more important matters tend to reduce the present unpatriotic demand for "just and reasonable rates," falsely so-called? Would it not tend to reduce the unpatriotic demand for justice and reasonableness only when it promises a reduction of the rate paid by the consumer?

Is Surplus or a Deficit Reasonable or Just?

We think it must be plain to every one that increase in the number of businesses declared by law to be utilities, increases the necessity for requiring each utility to pay its own way out of the funds it collects from its patrons. As long as there was no thought of anything except the postal service being conducted as a public undertaking, the taxpayers had less cause to complain about any surplus or deficit which might result from the government's management of that business. Also, as long as the water supply seemed to be the only business that cities or towns would undertake to conduct, there was less reason for the public to concern itself about either a surplus or a deficit from the operation of water plants.

But the list of businesses engaged in as public undertakings has increased. There is more or less agitation for still more businesses to be undertaken by the cities, states and nation. For instance, in the city where this article is being written, there is a more or less serious agitation for a municipal ice service. Would it be just or reasonable to supply the consumer of ice at nine-tenths of the actual cost, five-tenths of the actual cost or one-tenth of the actual cost—and then tax the public in general to make up the difference? On the other hand, would it be reasonable or just to manage a municipal ice service in such a manner as to charge the consumer one-tenth more, one-half more, or double the actual cost and then use the surplus to cut down the taxes of the general public? There are cities that boast of getting a surplus out of certain utilities.

Is Irresponsible Management Reasonable or Just?

Then again, is it reasonable or just to conduct a municipal ice service, a municipal water service, or any other utility without following the best known methods for ascertaining the standard of efficiency of management? From the before mentioned work, "Regulation of Urban Utilities in Iowa," we quote again:

"To cite an Iowa instance, the published reports of the city water works do not reveal the amount of water furnished to the city, the school district, business establishments, or private residences, the rates paid by, or the costs chargeable to, any class of consumers, nor the cost or value of the plant. A net profit is indicated on the face of the return. But since no allowance is made for interest, depreciation or taxes, and no credit given for water consumed by the city, it is impossible to tell whether there was not in fact a deficit. Yet the report is a rather favorable specimen of Iowa municipal accountancy."

Relative Efficiency of Utilities' Management.

As men proceed in the direction of a more complete mastery of the utility problem, there seems to be an increasing agreement to the effect that the difference between private ownership on the one hand, and public ownership on the other is much less than was at first supposed. The writer heard a representative of a state commission say to a utility convention: "It is our commission's duty to see that you boys do not make a profit which is higher than the rate of interest that has been declared by the supreme court to be just and reasonable."

It is plain that, in the beginning, there was behind the demand for utility regulation a great deal of this antagonism to profit, and little, if any, appreciation of the necessity for encouraging management. As experience helps us in our efforts to improvement regulation, those who are actively and responsibly interested, see more and more clearly that encouragement for the best sort of management is the thing that is needed most. The men who are active and responsible are coming to see more and more that there must be greater encouragement for the managers and increasing security for the security holders. They are coming to see that as we remove hope for extraordinary profits, we must give increasing encouragement of some other sort to the managers, and increasing security to the security holders.

Regulation, to be just and reasonable, must prevent the security holder from obtaining too large a return for the use of his property, on the one hand; but there is an equal obligation, on the other hand, which compels regulation to increase to the security holder, the public's guarantee against loss. There is an increasing obligation to increase the security holder's guarantee against loss as fast as his former degree of control over his property is diminished. Therefore, when regulation has given the public's fullest security against loss on the part of the security holders, the relationship of the security holder to the business is little if any different from that of the holder of a government bond. As before stated, regulation cannot be at the same time, both just and complete, unless it gives the public's complete guarantee to the security holder.

Therefore, after thus completing the public's guarantee to the security holder and after thus completing the regulative authority and practice, the question: "How to secure the best possible management?" is the matter of greatest importance to the utility patron and to the public. Concerning this matter of greatest importance, the supreme court of one of our states has said:

WHAT IS THE ITEM OF GREATEST IMPORTANCE?

"Because of the multitude of detail, the intricacy of the subject, the expert knowledge required, the numerous separate investigations of inter-related questions of fact which are necessary, and the necessity for frequent changes and adjustments in rates or service, a legislative body, the members of which are chosen for short terms from the body of the people, would find it an actual rather than a legal impossibility to fix just and reasonable rates."

In these days when the regulation of business by law is on the increase, would it not be well for the leaders of utilities and of public sentiment to encourage the study of this question: Do publicly operated utilities need regulative supervision any less than privately operated utilities?

Even municipally conducted utilities are not superior to the need of outside supervision. However honest and well meaning, local authorities rarely are equal to the task of keeping accounts in intelligible form. It is an exceptional city whose responsible officials can tell whether the municipal light or water plant is making or losing money, and on what kinds of service such gain or loss is incurred. Receipts and disbursements usually are classified by irrelevant funds, and so fail to show the "fixed" "output" and "consumer" costs, or the net income from each class of consumers. In providing for functional "general," "contingent," "bond" and "tax" funds, the necessity for a depreciation fund is apt to be overlooked. In many cases a fictitious profit is shown by ignoring interest, depreciation and expenses of management, or an apparent deficit produced by failure to credit the plant for service rendered to the city.—E. H. Downey in "Regulation of Urban Utilities in Iowa."

Surely there are many matters of sufficient importance to afford opportunity for the expenditure of all the energies of all the critics along constructive lines. Is it not the duty of utility leaders, and of all others who wish to benefit the public, to divert the attention of the public from mere antagonistic, obstructive and selfish criticism to a more constructive and patriotic interest and effort concerning these matters? Will not the offering of prizes for the best essays in answer to questions of the general sort indicated by the foregoing, help along toward the desired end?

We want to find the best means of remedying—rather than fault-finding. We solicit suggestions as to a better method than this scheme of offering prizes.

Utility companies have been accused of buying legislation. We all know that the press, the pulpit and the politician have "enjoyed" certain valuable concessions from the utilities in times past. The writer feels confident that the ministerial half fare permits issued by railroads were not bribes. But if any one insists on calling them bribes—then let us "tip" the public by giving prizes for a proper study of our problems.

Future of Ohio State Telephone Co.

That the earnings of the Ohio State Telephone Co. will show an increase as a merged company over the earnings of the separate companies during the last fiscal year is the opinion expressed by a prominent director of the company in New York City. The improvement will be particularly noticeable, he believes, in the long distance department where earnings are approximately 6 per cent. ahead of those of either June, July or August. A similar increase is shown over a year ago.

The company as is already known, has declared an initial dividend of 7 per cent. This was made possible through it having earned a substantial surplus over all charges since it began operations as a consolidated concern, and the dividend covers the period from July 23 to Sept. 30, 1914.

The director mentioned above stated that many Independent companies throughout the country are turning over a considerable amount of long distance business to the Ohio company. A large amount of money has been expended on the property during the past few months, and the efficiency of the 15 companies consolidated has been greatly improved as a consequence. It is the intention of the management to continue this program of improvement and betterment as the rapid increase in business has made it necessary to add to the service at many points.

The Ohio Public Utilities Commission authorized the new company to issue common stock not exceeding the par value of $5,206,000 and preferred stock not exceeding $4,850,000. A short time ago a syndicate was formed to underwrite $2,800,000 of the preferred stock of the company, which was offered for public subscription on the basis of one share of preferred stock and a bonus of 3/10 of a share of common stock for par and interest.

This offering was made just prior to the beginning of hostilities in Europe and a considerable amount of the issue was taken by subscribers, but since the war began there has been little demand for the remainder. It is confidently believed, however, that as soon as normal conditions prevail little difficulty will be experienced in disposing of the issue.

Of the total $2,800,000 of preferred stock that was offered for subscription, $500,000 was to provide funds to pay for money already expended for improvements and betterments and the remainder to strengthen the working reserve of the company.

J. P. Morgan & Co. sold its entire holdings in the Independent telephone companies in Ohio to the western capitalists who formed the Ohio State Telephone Co., to control and operate the system, and took in payment for its holdings 5 per cent. bonds of the new organization and a certain amount of the preferred and common stocks of the new company. The state commission permitted the issue of $5,000,000 of Series "B" consolidated and refunding mortgage sinking fund gold bonds under the mortgage held by the Bankers' Trust Co. The total amount of bonds which the company is permitted to issue is $23,000,000.

The director stated that he looked for continued improvement in earnings and considers the outlook favorable. With the various Independent companies under local management it is believed that the best possible operating results will be obtained. Cordial relations with the public are said to exist, which, in itself is an important element in the future of the organization.

The Vigilance of War.

The close watch which is being kept on lines of communication throughout the British Empire is shown by an incident which occurred recently near Vancouver, British Columbia, Canada. In order to determine the material required for a new circuit to an outlying district, a member of the engineering department of the British Columbia Telephone Co. was sent over the right-of-way of the Canadian Pacific Railway. His close scrutiny of the pole lines was very shortly reported at Vancouver with the result that officials of the railway company were rushed out to the place on a gasoline speeder and the telephone company's representative given a rapid and unwilling return trip. Presentation of badges and other credentials was not sufficient, the railway company refusing his release until assured by the telephone company officials of the nature of his peaceful task.

Out of the Mail Bag

In these days when war news covers the front page of every newspaper, a letter received by TELEPHONY from Thomas Hargreaves, of Rochdale, Lancashire, England, is of more than passing interest. Mr. Hargreaves is an attache of the British government telephone service. Hence, his reference to P. Kerr Higgins' article on government ownership in the August 1 issue. Adhering to President Wilson's suggestion regarding neutrality, TELEPHONY merely presents Mr. Hargreaves' letter without comment. Remember, he is an Englishman. He says:

"I have not yet received my copy of TELEPHONY for the week prior to August 1, and shall, therefore, be glad if you will please forward the same as early as possible, as I do not like to miss any copies. I have read with much interest the article by P. Kerr Higgins and must compliment him on his instructive paper. Sometime, perhaps, I may be tempted to enlarge upon the subject. As you know, we, in this country, are now engaged in a war which will probably change the map of Europe, and which, I hope, will reduce the greatest military despotism to a country which appreciates peace. We, in England, are firmly convinced that the war has been thrust upon us, and if we had only been willing to see Germany crush her neighbors, we should, in a very few years, have had to oppose a similar fate. You would be surprised if you saw the masses of people at the present time. There is no jingoism as in the Boer War but everyone, from boy scouts to grandfathers, is anxious to do something to help, and, if the worst comes to the worst, every man will be found doing his duty. So far, however, food is fairly plentiful and prices are normal. We are anticipating keeping open the sea routes, for those German cruisers will be so busy shortly, when the boys in blue get sight of them, that they will not have much time to harass merchant evssels. If you had, in your navy, a ship like the *Goeben*, what would you have thought if the commander had sought shelter? I should not like to be a British commander who ran away with a vessel of that type. We are all waiting patiently for the German navy to come out, but, as one of your papers has been saying, whether they stay at home or whether they come out, the final result will be the same, only keeping them fast is not as thrilling as getting them out in the open and letting them have it."

Contemplating the war-torn countries of Europe, Americans should be deeply thankful for the peace that prevails in the United States, even if business is rather quiet. Charles M. McCandless, manager of the Westphalia (Kansas) Telephone Co., throws a light on the happy condition of people living under the stars and stripes. "Business sure is good," says he, "we had a bumper crop of oats and an unusually large acreage. Hay is going out by the trainload and all prices are good. Corn hasn't looked better in five years. Even TELEPHONY is getting better. Kelsey is prime. Just like 'red eye,' he gets better with age. We wish you greater success."

A telephone man in a Southern state, in a letter remitting for his subscription, gives TELEPHONY credit for the advantageous changes he has made in his work during the last seven years. At his request his name is not given. His letter says:

"I am very much obliged to you for sending TELEPHONY to the various addresses I have had, owing to changes in my work, as I don't want to miss a single issue. I have read your paper for seven years now and couldn't do without it. TELEPHONY's want advertisements have been a great help to me. I have been steadily climbing the ladder through answering the classified advertisements in your columns, and each change has meant a better job and more money. And you know 'money talks,' if only to say 'Good-bye.' I thank TELEPHONY for the help it has been to me."

W. M. Brown, general auditor of the Central Home Telephone & Telegraph Co., Louisville, Ky., in a recent letter says: "We wish to express our appreciation of the P. Kerr Higgins 'dope' which appeared in your issue of August 29. It seems to me that he is so enthusiastic and earnest himself that it would be absolutely impossible for anything, or anybody, to stand still around him, and that, perforce, they must keep moving. I have recommended to all of our people that they study what Mr. Higgins says very carefully."

"Enclosed find my check for subscription to TELEPHONY," writes C. O. Livesay, Patoka, Ill. "I would have a hard time getting along without your paper after being used to it so long."

J. M. St. Clair & Son, Downing, Mo., in a letter remitting for subscription say: "We have read TELEPHONY so long we wouldn't think of trying to run an exchange without the paper."

"Your valuable magazine is appreciated by all the employes of this company from groundman to manager," writes N. L. Liggett, manager of the Union County Telephone Co., of Marysville, Ohio, in a letter renewing his TELEPHONY subscription.

E. A. McKey, Hubbard, Ore., writes: "I like your paper very well and during the time I have been a subscriber, it has been of great value to me in my work."

"It would be hard for us to keep posted, if it were not for TELEPHONY," writes Earl W. Neeson, manager of the Wellsburg (Iowa) Telephone Exchange, in a letter remitting for his subscription.

"Please extend my subscription to 1915," writes Joseph Bradley, manager of the United Telephone Co., at Plainville, Kan. "I wouldn't know how to keep house without TELEPHONY."

In a letter enclosing his remittance, George F. Birch, Macy, Ind., says: "I am pleased to renew my subscription as we cannot afford to miss a single issue of TELEPHONY."

John A. Sullivan, general freight and passenger agent of the Fort Dodge, Des Moines & Southern R. R. Co., Boone, Ia., writes: "I have read TELEPHONY with considerable interest and think the article 'Purely Psychological,' by J. C. Kelsey, is certainly good dope, as well as many of the other articles that go to make up good reading matter as well as good food for thought and practice. 'Public Relations in Theory and Practice' is something that should be impressed upon every business man's mind, and certainly, if put into practice would work a world of good to all mankind and we say that we are 'boosters!' 'Safety first,' and 'You help me and I'll help you,' but as soon as the first thing goes wrong, we commence to knock and complain, showing plainly that we are in the need of a few more lessons along the line of good fellowship."

"Keep TELEPHONY coming," writes John W. Chrisman, of Hooper, Colo. "We are always glad to get the paper and find it very useful."

"Enclosed find check for another year of TELEPHONY," says John J. Steele, owner and manager of the Green Ridge (Mo.) Telephone Co. "Keep it coming as we couldn't do without the paper."

"I have enjoyed your paper very much and, as it is a great help to anyone connected with the telephone business, you may count on my renewing my subscription," writes Rex A. Markham, of Benton, Neb.

Charles B. Jeffries, Salem, Mo., in a recent letter, says: "You may be able to do without my remittance, but I can't do without TELEPHONY, so keep on sending the paper."

From Factory and Salesroom

Convention: Ohio Independent Telephone Association, Columbus, Ohio, October 29, 30

Naugle Company Elects Secretary.

W. A. Lafean who, for the past five years has been financially interested in the Naugle Pole & Tie Co., of Chicago, through the Shaw estate, has accepted the position of secretary and treasurer of the company, succeeding the late J. W. Benham, who was killed in an automobile accident near Ravinia Park on July 27. Mr. Lafean will pay special attention to the producing and financing ends of the company's business.

A New Issue of Matthews Handbook.

W. N. Matthews & Bro., St. Louis, Mo., has published, in Matthews Handbook No. 9, an elaborate and very complete illustrated catalogue of the company's extensive line of specialties, so well known to the telephone and electrical trades. These include the Matthews teleheight, telefault, dead-end-eyes, prisections, easy lamp changer, holdfast lamp guards, fuse switch and scale knocker, which have been added since the publication of Catalogue 8 in May, 1912, as well as the extensive line of older specialties. The book is compiled by Claude Levering Matthews, member of the American Institute of Electrical Engineers and member of the Princeton Engineering Association, who is vice-president of the Matthews organization.

This handbook contains an extensive amount of data relating to and useful in connection with the Matthews' products. The book is made with pages bound in loose-leaf form, which permits supplements to be added if desired.

Kellogg Company at the Indiana Convention.

A group of men were standing before the Kellogg Automatic Recall switchboard demonstration at the Indianapolis convention last week. They had just seen how a call was handled under the varying conditions of service.

"What does the subscriber think about it?" asked one.

"Think about it? He doesn't have anything to think about. He knows that he gets a service superior to any heretofore offered and that is all that he is interested in."

"How about the directors?" suggested another.

"The directors," replied the demonstrator, "surely look at the telephone business from an unprejudiced standpoint. They have the owner's business sense as well as the manager's more technical viewpoint, yet they, being usually foreign to the business, so far as their own chief interests go, have the subscriber's non-technical idea based purely on what he believes a telephone service should offer. The director wants tangible results in profitable operating."

"And the manager?"

"He, if he has had experience with the Kellogg Automatic Recall system, believes in it because results show it saves time and money in operating.

"It is the traffic efficiency switchboard, cutting down the number of operators, increasing their ability, speeding up the service, yet doing away with the cumbersome mechanical operation that is necessary with the old style boards.

Fred Seeley Selling a Magneto Telephone to A. J. Carter.

"Kellogg Automatic Recall decreases maintenance and makes a better, more reliable switching service a fact. It gives a combination of advantages only offered by the Kellogg Switchboard & Supply Co. in the automatic recall exchange. Automatic ringing, automatic listening, secret service, automatic recall; all of these, with many incidental points of superiority, bring about a positive saving in operating in the service to every subscriber on your lines.

"If you have not seen the automatic recall switchboard in operation, write the company for detailed information and you will be advised where you can visit the company's many exchanges of this type—every one of which bears out the claim that this equipment is, in fact, the traffic efficiency switchboard."

B. H. Blake and M. S. Stazak at Convention Exhibit.

C. M. Bowling, Demonstrating Automatic Recall Board.

In addition to this demonstration which interested all callers at the Kellogg exhibit, the Kellogg Switchboard & Supply Co. displayed a complete magneto exchange including a 150 line board, its direct harmonic ringing equip-

ment, the new compact universal wall telephones and the new compact testing sets.

A complete line of magneto and common battery apparatus parts as well as standard telephones were on exhibition. L. D. Kellogg, president, and J. B. Edwards, general manager, attended. B. H. Blake, Indiana representative, was in charge, assisted by A. J. Carter, general sales manager; C. D. Boyd, sales engineer; C. M. Bowling, Illinois and Indiana representative, and E. I. Pratt, advertising.

As an index to business conditions, the convention, in attendance and the interest shown in new and up-to-date apparatus was a marked success.

Paragraphs.

THE COFFEY SYSTEM & AUDIT CO., an organization of public utility accountants, Indianapolis, Ind., is installing the Coffey system at Washington and Richmond, Ind. The company is unusually busy for this season of the year and has an additional force engaged in its work.

R. S. MUELLER, manufacturer's agent and warehouseman, 423-425 High Avenue, S. E., Cleveland, Ohio, is sending out a circular describing, and illustrating actual size, the Big Brute test clip No. 5, which, it is claimed, will carry 100 amperes continuously. The circular also shows the No. 6 size insulated with rubber shield. The Big Brute has a powerful bite; it is made of copper and is insulated.

Another circular shows the Mueller clamp lamps, consisting of a socket with combined reflector and guard mounted on a clamp of special design which enables the lamp to be clamped on the edge of a table or anywhere it is wanted.

Mr. Mueller has also issued the Cleveland Stock Sheet showing magnet wire in Cleveland stock on September 18.

A New Test Set.

The essential features of any lineman's test set are high efficiency, light weight and compact assembly. The weight should not be cut down to such an extent as to impair the talking and ringing qualities, nor should it be so great as to

Lineman's Test Set Showing Four-Bar Generator.

impede the user. In the design of the new No. 844 test set, the Stromberg-Carlson Telephone Mfg. Co. has struck a happy medium.

This set is a complete telephone in every respect; including in its equipment, transmitter, receiver, generator, hookswitch and battery. All of the apparatus is assembled in a neat compact oak case measuring 8½ by 7 by 5¼ inches, which is provided with a detachable leather carrying strap. The transmitter is the company's standard type mounted within a waterproof and moisture-proof case, sunk flush with the woodwork. The receiver, when not in use, is held in place on the top of the set by a retaining spring. Removal of the receiver from this retainer places the instrument in operative condition.

Lineman's Test Set Closed.

One of the accompanying illustrations shows the powerful standard size four-bar generator, which is wired in series with an alternating current buzzer. This buzzer is especially useful in testing, but also serves as a signal when the lineman is waiting for instructions from the wire chief. A cylindrical two-cell flashlight battery of a type obtainable at any electric shop is provided to operate the transmitter. In mounting this battery a novel arrangement, similar to a cartridge fuse mounting, has been employed to insure rigidity. All coil windings are treated with a weatherproofing compound, so that the instrument may be use in any weather.

The Stromberg-Carlson company will furnish interested parties with additional data concerning these sets upon application to any of its officers.

Garford Exhibit at Indianapolis Convention.

The Garford Mfg. Co., of Elyria, Ohio, had a very extensive exhibit at the Indianapolis convention of the Indiana Independent Telephone Association, thus taking advantage of the opportunity to again invite inspection of the company's apparatus by representative telephone men from all over the state and by a number of visitors from other states. The exhibit consisted of magneto and common battery board, magneto and common battery telephones, and miscellaneous parts. It was in charge of George A. Scoville, sales manager; H. L. Harris, sales engineer; Jack Murray, G. A. Joy, I. E. Lowenberg, and A. V. Overshiner.

The Garford company had its exhibit nicely arranged, all the equipment being in one room while an adjoining room was used as a reception and rest room for visitors. The representatives report meeting a great many old friends as well as many new ones, and quite a number of good orders were secured. The initial number of the new house organ "Gar-Facts," was distributed at the convention, and created considerable favorable comment.

Record of Telephone Patents Recently Issued

1,106,911. August 11, 1914. PROTECTOR; Joseph Zwilling, New York., assigned to Western Electric Co. A feature of this patent is a supporting base having an opening therethrough, and a recess in one face thereof. The contact springs or plates are arranged to extend through the openings in the base and to fit snugly into the recessed portion. The bent-over portion of the springs are adapted to fit into the recesses and to cover the openings.

1,107,145. August 11, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. In this patent methods are described by means of which manual exchange switchboards may be converted to semi-automatic systems.

1,107,146. August 11, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. The interconnection of the lines in this semi-automatic exchange system is brought about through the use of relays for the talking circuits controlled by unitary switches having traveling contacts.

1,107,147. August 11, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. In this system manually operated connective means are used for answering a call and extending the line circuit to the switching apparatus. A group, or groups of relays constitute the switching equipment. The relays are adapted to be energized successively by current impulses, the energization of each succeeding relay being dependent upon the energization of those preceding it.

1,107,148. August 11, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. The feature of this patent is the provision of means for automatically connecting a calling line to an idle terminal plug. A signal associated with each plug becomes active when a calling line is connected thereto.

1,107,149. August 11, 1914. SELECTIVE APPARATUS FOR SYSTEMS OF COMMUNICATION; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. Step by step, variably driven selective switches effect combinations of relays to interconnect the talking circuits.

1,107,150. August 11, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. Relates to the operator's equipment in a semi-automatic exchange. A plurality of banks of signal selecting keys, each comprising a plurality of keys, are arranged to short circuit the impulse proceeding means during various portions of the operation. According to the key of bank pressed various portions of each group of impulses may be made effective to control the switches.

1,107,146. August 11, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. Primary selector switches are provided for each subscriber's line. A number of trunks have multiple contacts in the primary selector switches which are less than the number of subscribers' lines. A first selector switch is provided at the other end of each of the trunks. An automatic switch is associated with the operator's circuit and contains terminals of a number of the trunks. Driving means and release or restoring means for the primary selector switches are under controll of the calling subscriber while the corresponding means for the operators' switches are controlled in the use of the primary selector trunks.

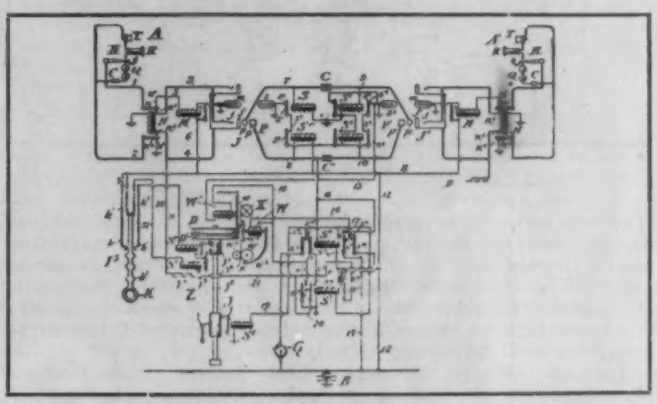
1,107,152. August 11, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement Washington, D. C. The automatic connective apparatus comprising connecting relays and governing step by step switches are arranged to be actuated by current impulses; the impulse sending apparatus is controlled by an operator through means for initially energizing the switches with impulses of current from her sending apparatus.

1,107,153. August 11, 1914. ELECTRIC SWITCH; E. E. Clement, Washington, D. C. A selective step by step switch is described. It comprises an open bank of contacts in the arc of a circle. A double wiper arm having contacts at both ends is adapted to be rotated in continuous engagement with the bank contacts but with only one end engaging at the same time.

1,107,154. August 11, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. Relates to the provision of automatic equipment including primary selector switches by means of which a part of the load is handled automatically whenever there is a predetermined increase in the load on any position of the main switchboard.

1,107,155. August 11, 1914. TELEPHONE REGISTERING SYSTEM; E. E. Clement, Washington, D. C.; assigned to Telephone Improvement Co., Attica, N. Y. By means of this system, a record is made of the operator who handles a particular volume of business. The number of calls made and answered by a subscriber together with the elapse is also recorded.

1,107,156. August 11, 1914. TELEPHONE REGISTERING SYSTEM; E. E. Clement, Washington, D. C.; assigned to Telephone Improvement Co., Attica, N. Y. A system is described



No. 1,107,155.

whereby the number of completed connections and elapsed time is registered. Means are under control of the subscriber for registering the completed connections and the elapsed time, while other means, controlled from the exchange, determine the time rate or speed of registering.

1,107,157. August 11, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. Relay and circuit connections for a ringing generator whereby the circuit becomes partially operative when connection is effected with a line are described. Periodical circuit closers act to render the circuit and relay completely operative at intervals to put the ringing generator current to the line. A relatively low resistance shunt about the relay is closed when the subscriber answered, thus rendering the ringing current inoperative.

1,107,255. August 18, 1914. TELEPHONE TRANSMITTER; Lynde Bradley and Harry L. Bradley; assigned to Allen Bradley & Co., Milwaukee, Wis. A variable resistor for a transmitter is described. It is comprised of two oppositely placed plates of low resistance carbon, which are surfaced with a comparatively high resistance of amorphous carbon.

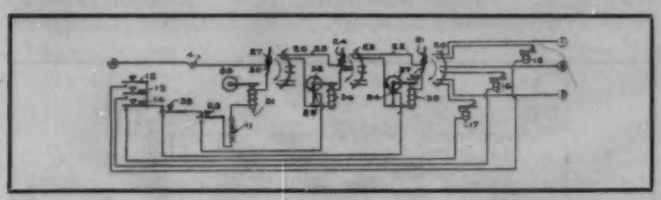
1,107,290. August 18, 1914. APPARATUS FOR METERING CONVERSATIONS IN AUTOMATIC TELEPHONE SYSTEMS; George Grabe, Nilolassee, near Berlin, Germany; assigned to Siemens & Halske Aktiengesellschaft, Berlin, Germany. A meter is placed in the pre-selector and connected to the calling line. A quick acting relay in the pre-selector is energized during the conversation as is also a slow acting relay. Both are de-energized at the end of the conversation. A circuit for the meter is closed by way of a working contact of the slow acting, and a rest contact of the quick acting relay.

1,107,371. August 18, 1914. TELEPHONE SYSTEM; Charles A. Simpson, Chicago; assigned to Kellogg Switchboard & Supply Co. Relates to a cord circuit for making connection between common and local battery telephone lines. A supervisory relay is provided for each end of the cord circuit, and a winding of each of these relays is connected in multiple with the talking conductors, through normal contacts of an associated switching relay. A second supervisory relay at each end of the cord circuit has a winding connected in bridge of the talking conductors through alternate contacts of the associated switching relay.

1,107,536. August 18, 1914. RELAY; Frank R. McBerty, New Rochelle, N. Y.; assigned to Western Electric Co. The feature of this relay lies in the core extending beyond the forward end of the coil. A pin, secured in an axial opening in the core, is adapted to insulatively engage a pair of contact plates. Each of the plates has a lug bent at right angles to the plane of the plates, and lying in different vertical planes on one side of the core. The armature is mounted alongside of the core extension and is provided with an arm adapted to rock between the lugs.

1,107,794. August 18, 1914. AUXILLARY SIGNAL DEVICE; Rex Ireland, Edison, Ohio. A telephone extension bell is described. The feature is an auxiliary signal on an independent circuit, having contacts closed by the movement of a carrier upon which the armature of the ringer is mounted. The contacts are held closed by the action of the ringer electromagnet.

1,108,166. August 25, 1914. MOISTURE-PROOF TELEPHONE SET; C. E. Hague, Rochester, N. Y.; assigned to Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y. The feature of this set is the arrangement of the polarized ringer.



No. 1,109,163.

The armature is mounted on one side of a plate and the ringer coils on the other, while the permanent magnet is made in two sections, one for each side of the mounting plate. The sections of the magnet are joined by connectors of magnetic material. When the ringer is in place, the mounting plate forms a water and gas-proof partition between the armature and the electromagnet.

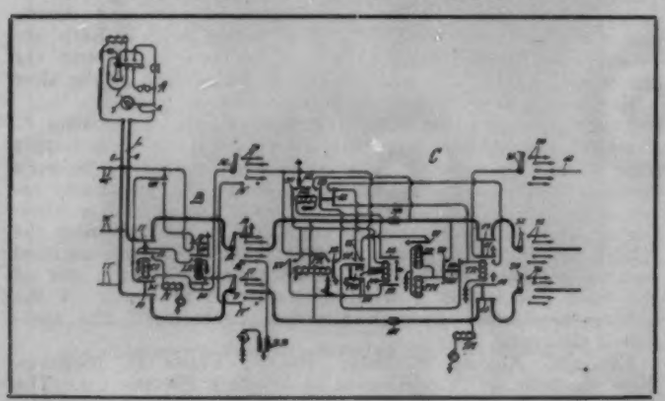
1,108,185. August 25, 1914. STORE SERVICE CREDIT SYSTEM APPARATUS; C. F. Kettering, Dayton, Ohio; assigned to National Cash Register Co., Dayton, Ohio. This patent describes the combination with a telephone system of an electrically controlled stamp, operated by a circuit closer placed at a distance from the stamp.

1,108,194. August 25, 1914. COIN CONTROLLED AUTOMATIC TELEPHONE EXCHANGE SYSTEM; W. W. Leach, Chicago; assigned to Western Electric Co. Automatic line selecting mechanism at the central office is operable from a calling station upon the tentative actuation of a toll device located at the station. The cycle of operations of the toll device is completed by automatic means controlled jointly by the response of the called subscriber and by the replacement of the calling subscriber's receiver.

1,108,305. August 25, 1914. TELEPHONE SIGNALING APPARATUS; D. D. Wright, San Francisco, Cal. This automatic signaling apparatus for producing a code signal, comprises a series of contacts over which a contact finger is arranged to move in cyclic succession.

1,108,383. August 25, 1914. TELEPHONE EXCHANGE SYSTEM; F. R. McBerty, New Rochelle, N. Y.; assigned to Western Electric Co. A test circuit for a selector is described. The test circuit has a path of high resistance through the winding of a relay having a high and low resistance winding. A contact, controlled by the relay, closes the path through the low resistance winding.

1,108,482. August 25, 1914. TELEPHONE SYSTEM; C. S. Winston, Chicago; assigned to Kellogg Switchboard & Supply Co. In this automatic system an operating magnet and a quick acting relay are placed in a multiple circuit. Current impulses over the multiple circuit operate the selector switch of which the magnet and relay are a part. The windings of the magnet and relay are so related that a current discharge from the relay, after each impulse, flows through the windings of the relay and magnet to maintain the armature of the relay attracted between impulses. A secondary circuit is controlled through contacts of the relay.



No. 1,108,482.

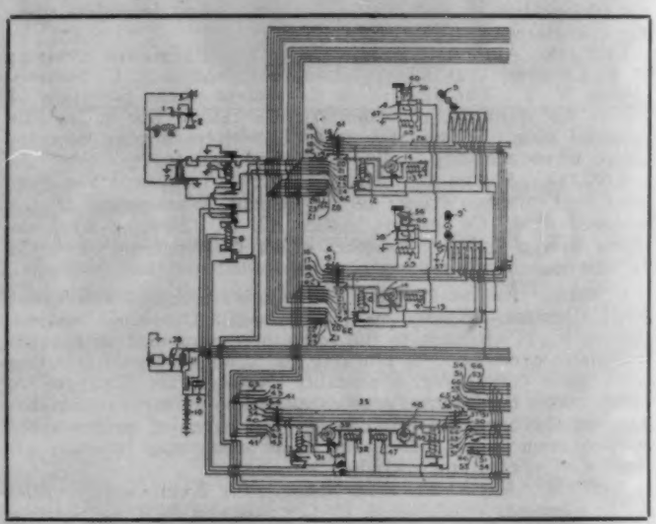
1,108,847. August 25, 1914. RINGER AND SECRET SERVICE DEVICE; John G. Neff and Charles A. Neff, Davey, Neb. A step by step mechanism is provided for each telephone on a party line. The circuit through all of the step by step mechanisms may be closed by means located at the exchange. By means of the mechanisms in the telephones, the signal circuit may be successively closed at the several telephones on the line.

1,109,036. September 1, 1914. ELECTRIC FUSE; P. C. Burns, Chicago; assigned to American Electric Telephone Co. An electric fuse is described, having its ends provided with internal grooved metal terminals to which the ends of the fuse wire are removably and electrically connected. Longitudinally split metal plugs fit within the ends of the terminals and hold the fuse wire in close electrical contact.

1,109,037. September 1, 1914. MOUTHPIECE ATTACHMENT FOR TELEPHONE TRANSMITTERS; P. C. Burns, Chicago; assigned to American Electric Co. Relates to a metal fitting for attachment to a glass mouthpiece.

1,109,038. September 1, 1914. EXTENSIBLE SUPPORT; P. C. Burns, Chicago; assigned to American Electric Co., Chicago. The feature of this extensible support is a lazy tongs adapted to be extended and contracted in a horizontal plane, and also extended to an upwardly inclined angle, in which position it may be locked.

1,109,111. September 1, 1914. TELEPHONE SYSTEM; Oliver Coleman, Wawanesa, Man., Can. Relates to a telephone party



No. 1,109,164.

line system with which is combined a telegraphic circuit. Selective calling is provided for by means of rotatable dials located in the telegraphic circuit at each station in the system, the dials presenting in each instance numbers representing all the call numbers of the parties connected to the system.

1,109,163. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. R. Corwin, Chicago; assigned to Frank B. Cook Co., Chicago. Details are given for the automatic extension of lines through an exchange with special reference to the controlling circuits governing the association of the connecting devices.

1,109,164. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. R. Corwin, Chicago; assigned to Frank B. Cook Co., Chicago. Described a semi-automatic system having common selector switches adapted to associate free operator's responsive devices with calling lines. Operator controlled apparatus takes part in establishing connection between calling and called lines.

1,109,165. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; M. L. Johnson, Chicago; assigned to Frank B. Cook Co., Chicago. Refers to a testing means for a semi-automatic system. The testing mechanism is governed jointly by link connectors and electromagnetic switching devices. The operator is enabled, as the electromagnetic switches operate, to determine the busy or idle conditions of the link connectors.

1,109,166. September 1, 1914. TELEPHONY; M. L. Johnson, Chicago; assigned to Frank B. Cook Co., Chicago. The feature of this semi-automatic system is the provision of operator controlled means for partially effecting modification of

selected controlling circuits for the purpose of arresting the switching parts of the line extending connecting device in the positions corresponding to the controlling circuits selected for modification.

1,109,167. September 1, 1914. TELEPHONY; M. L. Johnson, Chicago; assigned to Frank B. Cook Co., Chicago. A semi-automatic system is described in which an electromagnetic mechanism is provided for operating the means governed by the line extending device, step by step. The circuit for this mechanism and the means governed by the line extending connecting device for interrupting this circuit occasion the step by step operation of the electromagnetic mechanism.

1,109,216. September 1, 1914. AUTOMATIC TELEPHONE EXCHANGE SYSTEM; G. Grabe, Nikolassee, near Berlin, Germany; assigned to Siemens & Halske, A. G., Berlin, Germany. A feature of this automatic system is the provision of call seeking devices, adapted to move in two kinds of switching steps to seek a calling line. Means are provided so that the call seeking devices cannot stop at a sub-group of the subscriber's line already occupied by another call seeking device.

1,109,381. September 1, 1914. SIGNAL SYSTEM; F. H. Webster, Marvell, Ark. A relay semaphore signal system operated on a telephone circuit is described.

1,109,472. September 1, 1914. TELEPHONIC AND TELEGRAPHIC APPARATUS; Josef Schiessler, Baden near Vienna, Austria-Hungary. A telephone circuit having a winding in magnetic relation to an incandescent resistance winding in a relay circuit is described. A receiving circuit is in operative electrical relation to a resonating circuit having a regulable resistance and a variable capacity.

1,109,511. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. An automatic telephone system operated by relays is described. The relays have contacts adapted to directly interconnect the circuits. They are controlled selectively through the line circuits by means of a pre-determined total number of current impulses sent over the circuits.

1,109,615. Setpember 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. Relates to a semi-automatic system. A primary selector switch is associated with each answering jack containing line terminal.

1,109,616. September 1, 1914. ELECTRICAL SIGNALING SYSTEM FOR TELEPHONE EXCHANGES; E. E. Clement, Washington, D. C. A composite system is described. The feature is a common code signal receiving circuit and a separate selective switching mechanism adapted to be actuated over any one of the line circuits to connect it with the code signal receiving circuit.

1,109,617. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. In this semi-automatic system, primary selector switches answer the calls and initiate connection. Line selectors and connectors complete the connection. Secondary selectors, comprising sets of digitately associated relays, bring operators' sets into connection with the circuits of the primary and line switches.

1,109,618. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to Frederick C. Stevens, Attica, N. Y. Another semi-automatic system is covered by this patent. A primary switch is provided for each trunk and is adapted to connect the trunk with a calling line. A selector switch constitutes the connecting or calling terminal of the trunk. A continuous rotated secondary selector switch is individual to each operator's answering set and controlling apparatus for making connections to the trunk.

1,109,619. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. Automatic switches are provided for joining connecting links to calling lines, and other automatic switches make the connection to the called lines. Automatic means, individual to the links, connect an operator's set to a calling line.

1,109,620. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C. A feature of this semi-automatic system is a unitary automatic pilot or selector switch common to a plurality of lines and links. It contains testing terminals for the lines and acts in response to a call over any line to automatically select the calling line, and synchronously actuate connecting means to select the line and connect it with an idle link.

1,109,621. September 1, 1914. TELEPHONIC APPARATUS; E. E. Clement, Washington, D. C. A selective switch for an automatic system is described. It comprises a bank of contacts having a frame connected to it, carrying a spindle. A movable contact or wiper is carried on the spindle. Electromagnetic actuating means for the spindle are separately assembled and mounted as a unit upon the outside of the frame with actuating parts extending within the frame so as to operatively engage the spindle.

1,109,622. September 1, 1914. TELEPHONIC APPARATUS AND SYSTEM; E. E. Clement, Washington, D. C. The feature of this invention is an impulse transmitter or sending machine. An impulse commutator produces continuous series of impulses. By means of the impulse transmitter any desired number of impulses may be selected and transmitted at will.

1,109,650. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; T. G. Martin, Chicago; assigned to First Trust & Savings Bank, trustee, Chicago. Trunk apparatus for an automatic system is described in this patent. Provisions for trunking in one direction are separate and distinct for the means for trunking in another direction. They are allotted to and connected with the ends of two-way trunk lines.

Condensed News Reports

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personal.

E. K. SPENCER, president of the Pike County Telephone Co., of Petersburg, Ind., has resigned. Charles Head has been elected to succeed him.

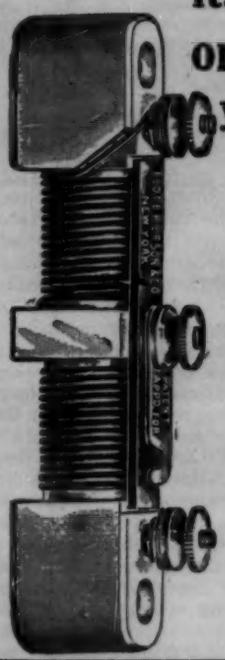
F. C. FLIPPEN, of Gloster, Miss., has been appointed manager of the local exchange of the Cumberland Telephone & Telegraph Co., succeeding Charles T. Norsworthy.

O. O. WELSHEIMER, for several years manager of the Toledo Home Telephone Co., Toledo, Ohio, has been transferred to Columbus where he will have charge of the home office of the Ohio State Telephone Co., of which the Toledo company is a part.

BERNARD WILLIAM LEAVITT, manager of the City Telephone Co., at Southern Pines, N. C., and secretary of the North Carolina Independent Telephone Association, was married on September 9, 1914, his bride being Nellie Bradford Wood. The wedding announcement is made by Mr. and Mrs. Irving L. Hardin, of Southern Pines. His many friends in the telephone field extend congratulations.

GEORGE A. FORD, of Toledo, Ohio, who for many years has been connected with the local telephone interests, has been appointed manager of the Toledo Home Telphone Co. Mr. Ford began his career as a bookkeeper for the Toledo Home Telephone Co. and has risen step by step, to his present position. While acting as manager for the Toledo district, which also includes Fostoria and Findlay, he will continue as assistant treasurer of the Ohio State Telephone Co.

ARTHUR KNEISEL, who was recently appointed assistant city telephone supervisor in Chicago, has long been identified with the Independent telephone interests. His connection with the industry began in 1900 with the switchboard installation crew of The Stromberg-Carlson Telephone Mfg. Co. on the Louisville, Ky., installation. He was wire chief for the Clarksville (Tenn.) Home Telephone Co., and later joined the engineering force of the Faller Automatic Telephone Exchange Co., being one of the first service-automatic engineers of the country. He had charge of Faller company's exhibit at the St. Louis World's Fair. Mr. Kneisel then became manager of the Eastern New York Telephone & Telegraph Co., at Hoosick Falls, N. Y. Up to last May he was connected with the engineering and patent department of the North Electric Co., and its ally, The Telephone Improvement Co. Mr. Kneisel



If lightning should make its *next* call on you--would you be *ready?*

Would it catch you unawares—napping? Would you be prepared? Do you know for a certainty that lightning cannot injure your service?

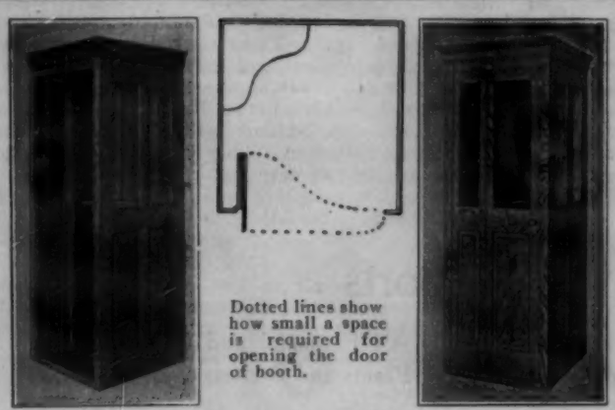
Are you well protected? You will be, if you use the **Argus Lightning Arrester.** No trouble is ever reported, where it is used, because there is no "lightning trouble."

It magnetizes and disrupts lightning.

May we explain it to you?

Foote-Pierson Company

160 Duane Street
New York City



Dotted lines show how small a space is required for opening the door of booth.

The Miller Folding Door Telephone Booth

is high grade in all respects, but the big features are the Folding Door and the saving in space it effects. Just the thing for pay stations. Don't buy another booth until you have investigated the Miller.

Write for folder.

C. H. BROWNELL, Peru, Ind.

is a registered patent attorney and has many inventions in manual and semi-automatic telephony to his credit.

Obituary.

EDWARD J. HALL, "father of the long distance telephone" and a vice-president of the American Telephone & Telegraph Co., died last week at Watkins, N. Y.

J. H. C. WATTS, of Baltimore, a pioneer in telephone enterprise in the United States, died recently at the age of 73. Years ago Mr. Watts was a member of the firm of Davis & Watts, which did much in introducing the telephone in the South. He was president of the National Association of Amateur Oarsmen of the United States.

New Companies.

WALDRON, ARK.—Articles of incorporation have been filed by the Waldron Telephone & Exchange Co., of which J. S. Hill is president. The capital stock of the company is $7,500.

OAKFORD, ILL.—Articles of incorporation have been issued by the secretary of state of Illinois to the Oakford Telephone Pole & Line Co. The capital stock is $630. The incorporators are: Henry Brauer, Hardin A. Lounsbery, J. W. Lynn and John C. Shadd.

HEBRON, IND.—The Hebron Telephone Co. has been incorporated with a capital stock of $10,000. The directors are John Wilkinson, Stanley Casbere and Marquerite Casbere.

KNIGHTSTOWN, IND.—The Wilkinson Farmers Mutual Telephone Co. has been incorporated with $1,000 capital stock. The directors are as follows: Cecil Morris, J. W. Conkling and Albert Youngs.

DUTCHTOWN, MO.—The Dutchtown Telephone Co. has filed articles of incorporation. The capital stock of the new company is $2.000. The incorporators are G. E. Alt, J. F. Frazer and F. Keller.

Construction.

KEY WEST, FLA.—The Southern Bell Telephone & Telegraph Co. is planning to extend its local system and enlarge its exchange, at a cost of $10,000.

CHICAGO, ILL.—The Illinois Central Railroad Co. has appropriated $50,000 for the equipment of a telephone train dispatching system between Clinton and Centralia. The company has 3,500 miles of track controlled by telephone dispatching system.

WILMINGTON, OHIO.—The Clinton Telephone Co. has issued $50,000 worth of bonds for the purpose of erecting a new telephone exchange and office building in this city to cost about $20,000. New exchange equipment will be installed.

HAZLETON, PA.—The Consolidated Telephone Companies have approved the plan for the installation of new points at Carbondale, Olyphant and Jermyn at a cost of $39,312. A new repair shop is to be built at Hazelton at a cost of $2,600, and the exchange at Reading is to be improved.

STAUNTON, VA.—The Staunton Mutual Telephone Co. will expend approximately $67,300 in installing a common battery system.

MADISON, WIS.—The Wisconsin Telephone Co. is remodelling its building, the construction of an addition of 85 feet long having been started.

Underground.

ALBANY, ORE.—The Pacific Telephone & Telegraph Co. has appropriated $5,000 for additional plant facilities, including aerial and underground cable in the western part of Albany and additional equipment for the central office.

Financial.

COLUMBUS, OHIO.—The Ohio State Telephone Co. has declared an initial dividend on its 7 per cent. paid stock, to cover the period from July 23 to Sept. 30, 1914, payable October 1, to stock of record September 25. This amount is necessary to bring subsequent dividends into the usual quarterly divisions of the year.

COLUMBUS, OHIO.—The Ohio State Telephone Co. has filed a mortgage amounting to $23,000,000 in favor of the Bankers' Trust Co. of New York.

MILLADORE, WIS.—The Milladore Telephone Co. has increased its capital stock from $4,000 to $6,000. Charles L. Petersen is secretary and E. A. Gebert, president.

Miscellaneous.

MEROM, IND.—The Merom Telephone Co. has changed hands. Ray Redifer, manager of the Merom Electric Co., purchasing 51 per cent. of the capital stock.

REASONS WHY
THE MANSBRIDGE SELF-SEALING CONDENSER
Has Made Good

Because it is a sound business proposition for the Telephone Engineer, and is equally good for the Manufacturer.

Because it cannot be put out of service by practical everyday work or by the exceptional punishment of the test-room.

Because it automatically seals up if punctured by a lightning discharge or high tension current.

Because it is lighter and smaller than the old form condenser and is no more costly.

THE MANSBRIDGE SELF-SEALING CONDENSER

Specified by discriminating Engineer and by BUYERS WHO KNOW.

What Bulgaria Thinks of It

The fighting equipment of the **Marvelously Successful Bulgarian Army** is well known to be of the highest type and of the most efficient character, and the same high efficiency has been insisted upon for their field telephones. **The whole of the field telephones of the Bulgarian Army are fitted with MANSBRIDGE CONDENSERS.** There is no condenser in existence which will stand the same severe service conditions.

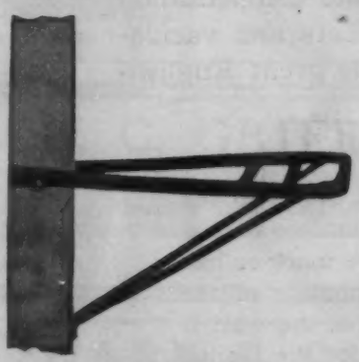
They have been adopted exclusively by the English government Telegraph and Telephone Administrations; and they are made under license by Western Electric Company, Ericsson Mfg. Co., Electric Specialty Co., Stromberg-Carlson Co., American Electric Co., and by numerous other licensees all over the world.

Insist upon having MANSBRIDGE CONDENSERS and save money in first cost, and also in maintenance.

For full particulars and for terms of manufacturing license in U. S. A. and Canada apply:

G. F. MANSBRIDGE, Mount House, New Barnet, England

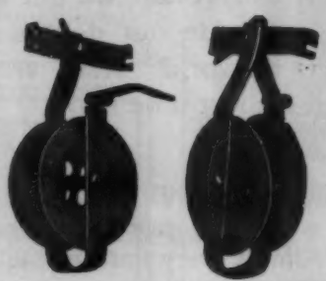
REDUCE YOUR OVERHEAD EXPENSES



Inexpensive Pole Seat

Security No. 2 may be just what you need. It is smaller and lighter than security No. 1, but designed along same lines, and is strong, safe and neat in appearance.

Price.....88 cents each



Security Cable Trolleys

Just what you need for stringing aerial cable. They are the only trolleys that will take any size cable and release it; they can't come loose, unhook, or work off the strand —try them.

	Each
Price, Cable Trolley No. 2.....	$1.50
Price, Cable Trolley No. 3 for cables of 1⅞ inches diameter and larger	1.80

Use This Security Can Top Terminal

Made with single panels firmly bolted to the heavy iron shoe and base. Square base and cover prevent possibility of disturbing fuses or connections when removing cover.

Price without pot heads, 5 pairs, $2.00
Price without pot heads, 10 pairs, 3.50

Did You Get Bulletin No. 6? It Lists the Full Security Line.

F. BISSELL COMPANY, Toledo, Ohio

"Fortunes of War"

The present European conflict fairly staggers the imagination. The tremendous armies and navies involved, the great loss of life, the stupendous destruction of property, all are so great as to nearly defy our comprehension.

And there is still another side. The little French girl who mourns a lover at the front finds herself jobless through the closing of the glove factory which has given her employment. The German hausfrau is troubled because of havoc Russian Cossacks are making of the wheat and barley intended for Prussian bread. Young Sandy McIntosh can't go to war, because he is crippled, but sits on the doorstep. The mill in which he worked is now closed. The mill hands are giving their attention to the business of war.

Meanwhile, the world's work must go on. Who will shoulder the burden of commerce while these neighbors make war on each other? Who indeed can, unless it to be the people of these United States of America?

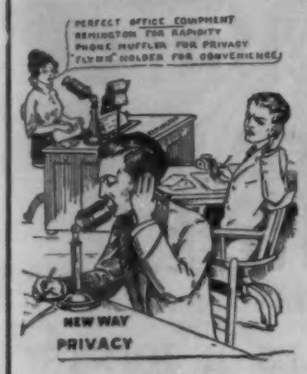
Will it be worth while? Shall we get adequate compensation for our efforts if we put aside our doubts and fears and vacillations and buckle down to work? Read what this great Englishman wrote about it but a short time ago:

> "A great war in Europe will enable the United States to sell its crops, in places which will give a much greater income than if there was no war. Almost every industry will derive more or less advantage. Should the American people take advantage of the golden opportunity afforded them by the outbreak of the war, it will mean not diminished, but increased prosperity for the United States."—Sir George Paish, Editor of the London "Statist."

WELL, LET'S GO TO WORK

A CONFIDENCE AD
By F. K. Anderson
Copyright 1914
The Furniture Journal, Chicago

A PRIVATE BOOTH ON YOUR DESK



You can insure absolute privacy and secrecy with

Scher's Improved Telephone Muffler

You need not leave your desk to go to a private booth to talk freely, and confidentially over the phone. This invention gives the equivalence of a telephone booth.

It is instantly attached and detached on the telephone transmitter. No complicated parts. Occupies 3½ inches of space on the mouthpiece of phone and is at your elbow when in need.

It is unquestionably the most useful telephone accessary of today. Made of Aluminum. Lasts a lifetime.

Used by U. S. Dept. of Agriculture, First National Bank, Guarantee Trust Co. and thousands of others over the world.

If dealers' can't supply you, we will forward one prepaid on receipt of **$3.50.**

AGENTS wanted in U. S. and Foreign Countries. Write for Territory.

Amalgamated Sales Corp., Mfr's., 1478 Broadway, Dept. A, New York City

RED DEVIL "BONDED" LINEMEN'S AND ELECTRICIAN'S TOOLS

are the result of over 30 years manufacturing experience.

And the stamp of RED DEVIL means the "OK" of the world's largest manufacturer in our line.

It is equivalent to "Sterling" in silver.

It removes all element of doubt.

That you may know for yourself, we will send one sample only 1650-8 "Bonded" heavy linemen's plier on receipt of $1.75 postpaid if your dealer can't supply.

Send for booklet anyhow.

SMITH & HEMENWAY CO.
140 Chambers St., New York, N. Y.

REBUILT BARGAINS

Kellogg 12-station size, inter-communicating telephones, of latest push-button type, wall type	$6.00
Desk type, same as above	7.00
Cracraft-Leich wall type automaphones complete, less batteries	4.75
Western Electric Co.'s No. 20 common battery induction coils	.30
Kellogg No. 17 or 6-A receivers, complete with cord	.75

For complete list of Standard apparatus, refer to our Rebuilt Bargain Bulletin (free upon request). Stock received since Bulletin was published, shown in "Telephony" ads.

THE REBUILT TELEPHONE EQUIPMENT COMPANY
2127-2129 West Twenty-First Street Chicago

CEDAR POLES

Write for Prices. Prompt Shipments from Wisconsin or Chicago Switching District Yard on I. H. Belt R. R.

TORREY CEDAR CO., Clintonville, Wis.

McMEEN and MILLER
(Incorporated)

Samuel G. McMeen Kempster B. Miller Leigh S. Keith

TELEPHONE ENGINEERS

1454 Monadnock Block CHICAGO
407 Electric Building CLEVELAND

No One Disputes That We Have The Best

Because—it tells which way and how far trouble is from tester without opening the line. Sent on trial. Write today.

STEWART BROS. OTTAWA, ILL.

L. C. GRIFFITTS
CONSULTING ENGINEER

Construction Operation Development Appraisals Accounting
Utility Commission Representation a Specialty

AURORA ILLINOIS

EDWARD E. CLEMENT
ATTORNEY AT LAW

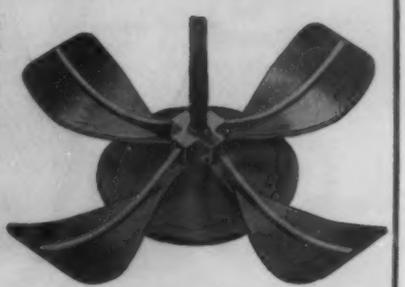
Practice includes representation before the Interstate Commerce Commission

SOLICITOR OF PATENTS

OFFICE: McLACHLEN BUILDING, WASHINGTON, D. C.

The Faultless Anchor

The name tells a true story. The man who buys them, comes back for more—there is a good big reason. Send us your order and find out why. Write us.



The Faultless Anchor Co.
Fostoria, O.

D. C. & WM. B. JACKSON

CHICAGO Harris Trust Co. **ENGINEERS** **BOSTON** 248 Boylston St.

Plans, Specifications, Supervision of Construction
General Superintendence and Management
Examinations and Reports
Financial Investigations and Rate Adjustments

Please tell the Advertiser you saw his Announcement in TELEPHONY.

Carrying 30 feet 3-inch socket joint conduit.

Orangeburg Fibre Conduit

("Admitted to be the best Fibre Conduit")

Made in FOUR STYLES OF JOINTS

Socket, Sleeve, Screw and Harrington

WITH BENDS AND FITTINGS FOR SAME

Is the lightest conduit made

and means low freight and cartage costs

Send for The Conduit Book

THE FIBRE CONDUIT COMPANY

103 Park Ave., New York
1741 Monadnock Bldg., Chicago
S. B. Condit, Jr., & Co., Boston, Mass.
Bryant Zinc Co., Chicago, Ill.

MAIN OFFICE AND FACTORY
Orangeburg, New York
McClary-Jemison Machinery Co., Birmingham, Ala.
Tri-Provincial Electrical Supply Co., Winnepeg, Can.

Pierson, Roeding & Co.,
San Francisco, Cal.
Los Angeles, Cal.
Seattle, Wash.
Salt Lake City, Utah

THE STRENGTH

of your line wire depends on its area.

Rust decreases area.

Roebling Double Galvanized Wire keeps its area because it is **protected against rust by real galvanizing.**

John A. Roebling's Sons Co.

TRENTON, N. J.

Prompt Shipments of Double Galvanized and Hard Drawn Copper Wire and Wire Strand from Stocks at Trenton, N. J., and Roebling warehouses at

New York Chicago Philadelphia Cleveland Atlanta San Francisco Los Angeles Seattle Portland, Ore.

"Opportunities"

Copy for classified advertising for the current issue should reach us not later than Thursday morning when forms close. Rates for classified advertising will be sent upon request.

"Rebuilt" Telephone Apparatus

and exchange equipment saves you 30 to 50 per cent without sacrificing quality or efficiency.

Switchboards

—Telephones—Apparatus—Protection Equipment—Cable—Everything you need for the installation and operation of a complete exchange—Magneto or Central Energy—of the best and most reputable manufacturers.

Seven Years Successful Operation

of our "Rebuilt" Equipment Department puts it past the experimental stage. Quality and price will make you a permanent customer. Better investigate.

Ask for Our Free No. 78 Bargain Bulletin. Address
"Rebuilt" Equipment Department
PREMIER ELECTRIC COMPANY Chicago, Ill.
"REBUILT" when connected with PREMIER means something

Telephone Bookkeeping

USE OUR SIMPLIFIED SYSTEM and "Printco" books and forms and save money, time and worry. Free samples and price list. Telephone Printing Co., Defiance, Ohio.

Cable Testers

A CABLE TESTER to be a success must work thru high resistance Moisture faults as well as dead shorts, crosses or grounds. Get a Wireless Cable Tester on trial and compare it with any other. Electric Specialty Mfg. Co., Cedar Rapids, Iowa.

Cross Arms, Pins and Brackets

TELEPHONE COMPANIES—We make yellow pine cross arms, pins, steps and brackets. Prices and quality right. Prompt shipment. Write us. Central Lumber Co., Chattanooga, Tenn.

Directory Hangers

WE BEG TO DIRECT YOUR ATTENTION to the Universal Wire Loop, an improvement upon the ordinary string loop for hanging up catalogues, directories, telephone books, prices current, etc. Write us for prices and samples. Wire Loop Mfg. Co., 75 Shelby St., Detroit, Mich.

Equipment For Sale

FOR SALE CHEAP—Having installed central energy, we offer for sale at about one-third the original cost, about 1,000 compact style bridging telephones that are practically as good as new; also a few hundred series telephones of same style. Send for descriptive circular. Richard Valentine, Gen. Mgr. Rock County Telephone Co., Janesville, Wis.

Expert Services

I AM A PATENT EXPERT. Consulting Engineer and Specialist in Electrical and Telephone Engineering. What is your problem? Francis W. Dunbar, Monadnock Block, Chicago, Ill.

Help Wanted

WANTED—Lady manager and assistant for exchange of 250 telephones, good pay, nice location and all equipment and methods modern. Address The United Telephone Co., Monroe, Wis.

WANTED—Partner with or without service to build small exchange, good territory, state amount can invest. Address P. O. Box 87, Gresham, Oreg.

Plant Wanted

WANTED—A 120-line lamp switchboard, also 120 portable desk and wall telephones. Stromberg-Carlson, or Dean Electric Co. make. Address L. J. Loeffler, 20 Fulton St., New York, N. Y.

WANTED—To exchange an improved 320 acre farm in Oklahoma, but four miles from railroad town; with house and barn; soil is adapted to wheat, corn, cotton, sweet clover, blue stem and alfalfa grass. Valued at $8,000; for a telephone exchange worth from 6,000 to $9,000. For full particulars, address "Owner," Lock Box 244, Kiowa, Kansas.

Poles

CHESTNUT POLES—We specialize in 6 and 7-inch top chestnut poles, 25 to 50 feet long. Also Long Leaf Yellow Pine Cross Arms. John A. Cranston Lumber Co., 109 King St., Wilmington, Dela.

POLES—Always complete stock on hand. We can save you money. Write today for delivered prices. Prompt shipment. E. C. Wetherby & Co., Warroad, Minn.

Positions Wanted

WANTED—Competent telephone executive with fifteen years' experience in commercial, traffic and plant, desires position. For particulars address 1901, care TELEPHONY.

WANTED—Position by all around telephone man, as wire chief, switchboard or troubleman, experienced in all branches, both magneto and common battery. Fourteen years' experience. Married and sober. Address 1898, care TELEPHONY.

WANTED—Position as manager of telephone company; eight years' experience in all branches. At present, I am manager of company where I have been for three years. I am married, sober and a good mixer with the public. Can furnish references. Will go anywhere, but prefer Virginia or North Carolina. Can take stock in company if desired. Address Hustler, care TELEPHONY.

WANTED—Permanent position as an all around telephone man in some small city exchange, understand testing cable. Maintenance, outside and inside construction. Local or common battery. Can furnish references. Address 3333, care TELEPHONY.

WANTED—By telephone man now employed who desires connection with some good independent company either as superintendent or in engineering department. Twelve years' experience. married. Address 1895, care TELEPHONY.

Ribbons for Calculagraph

A 50 PER CENT. SAVING interests you. Our price, 25c each —$2.50 per dozen. Customers say, "Best ribbons they have ever used." Horney & Wright, La Fayette, Ind.

Telephone Plant Construction

WHEN YOU BUILD A NEW EXCHANGE or rebuild your old one, you will save money by consulting with us. Correspondence solicited. Home Electric Construction Co., Macomb, Ill.

Telephone Supplies

WE ARE JOBBERS. Get our prices on telephones, wires, pins, brackets, poles, cross arms, glass insulators—pole line hardware. Indianapolis Elec. Supply Co., Indianapolis, Ind.

CONSTRUCTION SUPPPLIES—Anything you need for your construction work can be ordered from us at prices that can't be beat. Doubleday-Hill Elec. Co., 721 Liberty Ave., Pittsburgh, Pa. Southern Warehouse, 727 12th St., N. W., Washington, D. C.

Test Connectors

WHY NOT GET THE BEST, as long as it costs no more? N. C. Test Connectors have exclusive advantages. Write if interested. Schutz Mfg. Co., 3225 Ravenswood Ave., Chicago.

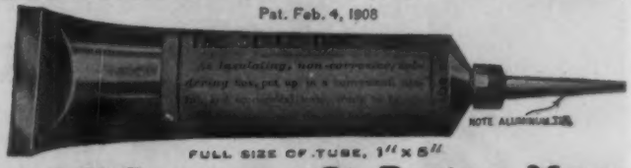
Timing Devices

ACCURATE TOLL CALL RECORDS are of prime importance. Monarch Time Stamps provide records that cannot be questioned. Write for information. Walker Bros. & Haviland, Chicago, Philadelphia, New York.

Insulated Staples
5 Sizes
Pat. Nov., 1900

BLAKE Specialties

STAPLES best for wiring.
TUBE FLUX best Flux for soldering.



FULL SIZE OF TUBE, 1" x 5"

BLAKE SIGNAL & MFG. CO., Write for Samples 251 Causeway St., Boston, Mass.

"Buyers" Reference Index

The letter with accompanying number indicates the name of advertiser as given in full in the Alphabetical Index to Advertisers, on the opposite page. *When making known your wants* to any company listed herein, please mention TELEPHONY.

Aerial Cable Rings
C3, D9, E20, N9, S25.

Anchors, Guy
C47, E20, F3, G8, J5, M12, W20.

Appraisers
G6, J2, L9, M2, P8.

Arms and Brackets (for holding telephones)
A13, C38, S33.

Arms, Cross
A10, B10, K6, S18, W20.

Arresters, Lightning (See Protective Devices)

Asbestos
J5.

Attorneys, Patent
C20, D15, M2.

Auditing, Accounting
C32, G6, P8.

Automatic Telephones
A22.

Bars, Tamping and Digging
H8, K8, L4.

Batteries, Dry
A13, F14, J5, M5, N17.

Batteries, Primary
E2.

Bells, Magneto
A13, S6.

Blank Books, etc.
T3.

Bolts and Nuts
D9, H8, L4, R7.

Bolts (Expansion)
C20, D9, H8, L4, S25.

Bolts (Toggle)
D9, H8, L4, S25, W12.

Books
D10, S22.

Booths, Telephone
B19, F16, Y2.

Boxes, Battery
E17, P7.

Cable
A15, A16, A25, I5, R9, S12, S23.

Cable Cars
B10, H1.

Cable, Clips (See Clips, Cable)

Cable Hangers (See Hangers, Cable)

Cable, Rollers
B10, H1, M12.

Cable Splicing Joints
M12.

Cable Terminal
C38, H1, R4.

Carbon
F14, M5, N17.

Clamps, Ground (Plates, Cones)
B15, C3, N2, P7, S25.

Clamps, Guy
C38, C47, E20, H8, L4, M12, N9, R4.

Clamps, Lamp
M32.

Climbers
C27, K8, S15.

Clips, Cable
A25, C38, M12.

Clips, Testing
F11.

Clocks
R17, S33, W1.

Composition, Insulation
E11, G2, S9.

Concrete Mixers
S14.

Condensers
A13, A25, E6, M7.

Conduit, Underground
B17, C7, F3, J5, M4, W20.

Connectors, Test
C38, R4, S4.

Connectors, Wire
C38, N9, R4.

Construction Specialties
B10, C3, C38, E17, H8, K8, M12, R4, S15.

Cord Adjusters
M12.

Cordage, Telephone
A25, B4, M28, R17, S35.

Counters
V4.

Creosoting
W20.

Distributing Racks
C38, R4.

Electrical Instruments
F10, L7, M12, P13, W10.

Engineers, Telephone
C30, D15, G6, J2, L9, M2.

Fans, Booth
H1.

Fibre
C35.

Fire Alarm Systems
F10.

Flux, Soldering
A25, B4, B7, B13, B15, B22, D18, H6.

Fuses, Mica
C38, H1, R4.

Generators, Ringing
W2.

Gloves
M31.

Grounding Device
B15, C3, P7.

Guy Anchors (See Anchors)

Guy Clamps (See Clamps, Guy)

Hangers, Cable
B10, C3, C38, E10, E17, E20, H1, M12, N9, R4.

Improved Party Line Systems
D4.

Instruments, Cable (Fault Finding)
E9, M12, S32.

Insulators
E17, H3, I3, P7, U2.

Intercommunicating Systems
A25, K5, S35.

Iron, Norway
N1.

Joints, Cable Splicing (See Cable Splicing Joints)

Motor Trucks
R6.

Office Fixtures
B19.

Operator Chairs
H4.

Operators' Supervising Sets
A25.

Overhead and Underground Construction Work
S13.

Parts, Special Telephone
A13, A22, A25, C42, E11, G1, G2, K5, S9, S35.

Pay Stations
D4.

Pins and Brackets
B10, S18.

Pipe Locater
M12.

Platinum
B2.

Pole Changers
C48, W2.

Pole Height Estimator
M12.

Pole Line Hardware
B10, H1, H8, J5, K8, L4, N9, W15.

Polerectors
M12.

Poles, Wood
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Wire for all uses, Piano, Aeroplane, Mattress, Broom, Fence, etc.
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Wire, Weatherproof
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MAINTENANCE: The FOLDING DOOR does not require the use of tracks in the floor, and, consequently, eliminates the main item of trouble experienced with the booths equipped with sliding doors. This is one of the many advantages of the FOLDING DOOR booth.

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Patented Nov. 15, 1904
No. 2521

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You can make a "test" in one-tenth of the time required to skin a wire for one, and neither does the wire or insulation suffer any damage.

The point pierces the insulation and makes a perfect test. Can be used constantly, yet the point will never dull.

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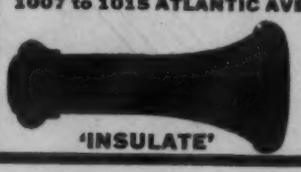

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Waterproof - Permanent - Strong
A laminated *Insulating* material of highest efficiency
ALSO **VULCANIZED FIBRE**
In Sheets-Rods-Tubes-Special Shapes
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Chicago, Ill., U. S. A.
Write for Catalogue and Price List Just Issued.

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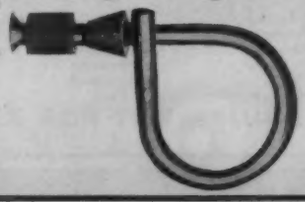
"IS IN TO STAY"

When set, nothing can budge or loosen it. Quickly and cheaply installed, no cost for maintenance, because it will last forever.
Cheapest on market.

Chicago Expansion Bridle Ring



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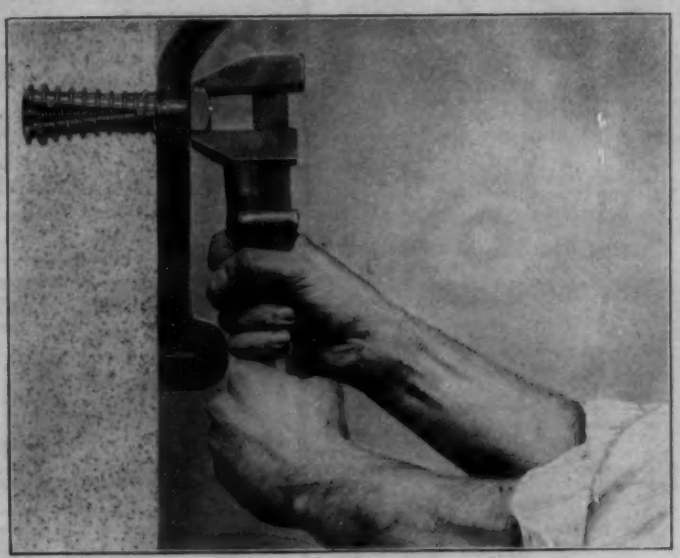

SEBCO Expansion Bolts Screw Anchors

For attaching telephone sets, switchboards, meters, switches, motors, cable hangers, insulators, lamps or any kind of fixture or apparatus to brick, stone, concrete or other hard substance so that they **will not come down unless purposely removed.** Quick, neat, they make a **permanent, immovable fastening.** The BOLTS or ANCHORS imbed themselves in the material which surrounds them until they are practically part thereof.

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Manufacturers of the 7,000,000 "Bell" Telephones

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Pittsburg	St. Louis	Indianapolis	Omaha	Seattle	Calgary	Paris
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EQUIPMENT FOR EVERY ELECTRICAL NEED

No. 30

"Booth Bargains"

If you want a high-grade Booth at "Bargain" Prices, this offer will interest you.

Just because these booths are marked way below their ordinary selling price, don't for a minute think that they are ready for the shelf, or that they are "second-hand." They are brand new booths and we are offering them at attractive prices, to dispose of them quickly, in order to provide more space for other specialties and fall stock.

These booths are of the popular Yesbera make, and embody every feature necessary to the giving of satisfactory booth service. Double walls—well lighted and excellently designed and constructed.

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No. 63.	One in Quartered Oak	60.38	36
No. 60.	One in Mahogany	51.75	36
No. 60.	One in Quartered Oak	62.00	40
No. 24-B.	Three in Mahogany	33.00	24
No. 24-B.	Five in Plain Oak	$33.00	$25
No. 27.	Four in Plain Oak	38.00	30
No. 27.	Two in Mahogany	38.00	29
No. 30.	Seven in Plain Oak	43.00	35
No. 48.	One in Mahogany	46.00	32
No. 51.	Two in Plain Oak	46.00	32
No. 51.	Two in Quartered Oak	51.00	36

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CHICAGO GRIP.
For All Sizes of Bare and Insulated Wire.

THERE'S DECIDED ECONOMY IN PROPERLY EQUIPPING YOUR MEN WITH A COMPLETE SET OF GOOD TOOLS

The character of the work your men turn out is governed by the character of the tools they use.

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have been the choice of electricians, construction men and linemen for half a century.

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Canal Station 34, CHICAGO

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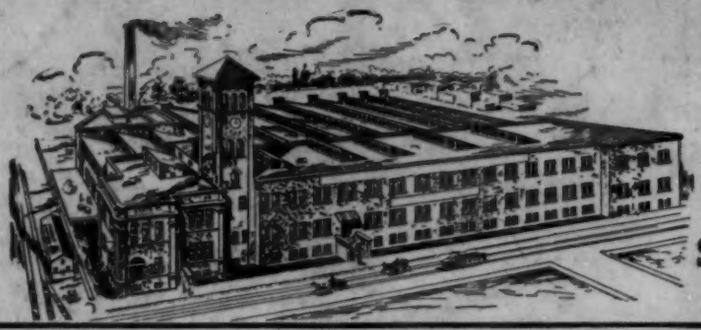
With Pulley.

Splicing Clamp for Nos. 0, 2 and 4 Copper Wire.

AMERICAN ELECTRIC CO.



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Eastern and Southern Agents
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A NEW PIGNOLET TELEPHONE

VOLTMETER OR VOLT-AMMETER

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No exchange, large or small, should be without them.

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DETROIT Michigan

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Rome Wire Company

ROME, N. Y.

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FOR SUPPORTING DROP WIRES

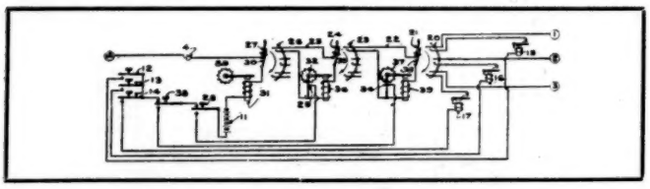
Neat, Easy to Use and Practical

WRITE FOR FREE SAMPLE

Universal Specialty Co.
116 So. 7th St. TERRE HAUTE, IND.

1,107,794. August 18, 1914. AUXILLARY SIGNAL DEVICE; Rex Ireland, Edison, Ohio. A telephone extension bell is described. The feature is an auxiliary signal on an independent circuit, having contacts closed by the movement of a carrier upon which the armature of the ringer is mounted. The contacts are held closed by the action of the ringer electromagnet.

1,108,166. August 25, 1914. MOISTURE-PROOF TELEPHONE SET; C. E. Hague, Rochester, N. Y.; assigned to Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y. The feature of this set is the arrangement of the polarized ringer.



No. 1,109,163.

The armature is mounted on one side of a plate and the ringer coils on the other, while the permanent magnet is made in two sections, one for each side of the mounting plate. The sections of the magnet are joined by connectors of magnetic material. When the ringer is in place, the mounting plate forms a water and gas-proof partition between the armature and the electromagnet.

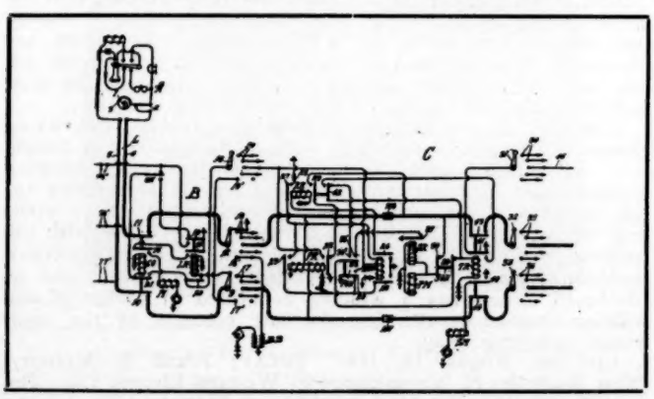
1,108,185. August 25, 1914. STORE SERVICE CREDIT SYSTEM APPARATUS; C. F. Kettering, Dayton, Ohio; assigned to National Cash Register Co., Dayton, Ohio. This patent describes the combination with a telephone system of an electrically controlled stamp, operated by a circuit closer placed at a distance from the stamp.

1,108,194. August 25, 1914. COIN CONTROLLED AUTOMATIC TELEPHONE EXCHANGE SYSTEM; W. W. Leach, Chicago; assigned to Western Electric Co. Automatic line selecting mechanism at the central office is operable from a calling station upon the tentative actuation of a toll device located at the station. The cycle of operations of the toll device is completed by automatic means controlled jointly by the response of the called subscriber and by the replacement of the calling subscriber's receiver.

1,108,305. August 25, 1914. TELEPHONE SIGNALING APPARATUS; D. D. Wright, San Francisco, Cal. This automatic signaling apparatus for producing a code signal, comprises a series of contacts over which a contact finger is arranged to move in cyclic succession.

1,108,383. August 25, 1914. TELEPHONE EXCHANGE SYSTEM; F. R. McBerty, New Rochelle, N. Y.; assigned to Western Electric Co. A test circuit for a selector is described. The test circuit has a path of high resistance through the winding of a relay having a high and low resistance winding. A contact, controlled by the relay, closes the path through the low resistance winding.

1,108,482. August 25, 1914. TELEPHONE SYSTEM; C. S. Winston, Chicago; assigned to Kellogg Switchboard & Supply Co. In this automatic system an operating magnet and a quick acting relay are placed in a multiple circuit. Current impulses over the multiple circuit operate the selector switch of which the magnet and relay are a part. The windings of the magnet and relay are so related that a current discharge from the relay, after each impulse, flows through the windings of the relay and magnet to maintain the armature of the relay attracted between impulses. A secondary circuit is controlled through contacts of the relay.



No. 1,108,482.

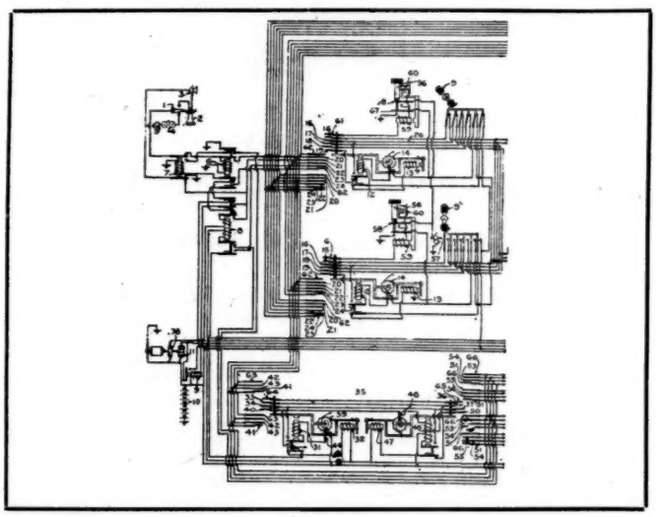
1,108,847. August 25. 1914. RINGER AND SECRET SERVICE DEVICE; John G. Neff and Charles A. Neff, Davey, Neb. A step by step mechanism is provided for each telephone on a party line. The circuit through all of the step by step mechanisms may be closed by means located at the exchange. By means of the mechanisms in the telephones, the signal circuit may be successively closed at the several telephones on the line.

1,109,036. September 1, 1914. ELECTRIC FUSE; P. C. Burns, Chicago; assigned to American Electric Telephone Co. An electric fuse is described, having its ends provided with internal grooved metal terminals to which the ends of the fuse wire are removably and electrically connected. Longitudinally split metal plugs fit within the ends of the terminals and hold the fuse wire in close electrical contact.

1,109,037. September 1, 1914. MOUTHPIECE ATTACHMENT FOR TELEPHONE TRANSMITTERS; P. C. Burns, Chicago; assigned to American Electric Co. Relates to a metal fitting for attachment to a glass mouthpiece.

1,109,038. September 1, 1914. EXTENSIBLE SUPPORT; P. C. Burns, Chicago; assigned to American Electric Co., Chicago. The feature of this extensible support is a lazy tongs adapted to be extended and contracted in a horizontal plane, and also extended to an upwardly inclined angle, in which position it may be locked.

1,109,111. September 1, 1914. TELEPHONE SYSTEM; Oliver Coleman, Wawanesa, Man., Can. Relates to a telephone party line system with which is combined a telegraphic circuit. Selective calling is provided for by means of rotatable dials located in the telegraphic circuit at each station in the system, the dials presenting in each instance numbers representing all the call numbers of the parties connected to the system.



No. 1,109,164.

1,109,163. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. R. Corwin, Chicago; assigned to Frank B. Cook Co., Chicago. Details are given for the automatic extension of lines through an exchange with special reference to the controlling circuits governing the association of the connecting devices.

1,109,164. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. R. Corwin, Chicago; assigned to Frank B. Cook Co., Chicago. Described a semi-automatic system having common selector switches adapted to associate free operator's responsive devices with calling lines. Operator controlled apparatus takes part in establishing connection between calling and called lines.

1,109,165. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; M. L. Johnson, Chicago; assigned to Frank B. Cook Co., Chicago. Refers to a testing means for a semi-automatic system. The testing mechanism is governed jointly by link connectors and electromagnetic switching devices. The operator is enabled, as the electromagnetic switches operate, to determine the busy or idle conditions of the link connectors.

1,109,166. September 1, 1914. TELEPHONY; M. L. Johnson, Chicago; assigned to Frank B. Cook Co., Chicago. The feature of this semi-automatic system is the provision of operator controlled means for partially effecting modification of

selected controlling circuits for the purpose of arresting the switching parts of the line extending connecting device in the positions corresponding to the controlling circuits selected for modification.

1,109,167. September 1, 1914. TELEPHONY; M. L. Johnson, Chicago; assigned to Frank B. Cook Co., Chicago. A semi-automatic system is described in which an electromagnetic mechanism is provided for operating the means governed by the line extending device, step by step. The circuit for this mechanism and the means governed by the line extending connecting device for interrupting this circuit occasion the step by step operation of the electromagnetic mechanism.

1,109,216. September 1, 1914. AUTOMATIC TELEPHONE EXCHANGE SYSTEM; G. Grabe, Nikolassee, near Berlin, Germany; assigned to Siemens & Halske, A. G., Berlin, Germany. A feature of this automatic system is the provision of call seeking devices, adapted to move in two kinds of switching steps to seek a calling line. Means are provided so that the call seeking devices cannot stop at a sub-group of the subscriber's line already occupied by another call seeking device.

1,109,381. September 1, 1914. SIGNAL SYSTEM; F. H. Webster, Marvell, Ark. A relay semaphore signal system operated on a telephone circuit is described.

1,109,472. September 1, 1914. TELEPHONIC AND TELEGRAPHIC APPARATUS; Josef Schiessler, Baden near Vienna, Austria-Hungary. A telephone circuit having a winding in magnetic relation to an incandescent resistance winding in a relay circuit is described. A receiving circuit is in operative electrical relation to a resonating circuit having a regulable resistance and a variable capacity.

1,109,511. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. An automatic telephone system operated by relays is described. The relays have contacts adapted to directly interconnect the circuits. They are controlled selectively through the line circuits by means of a pre-determined total number of current impulses sent over the circuits.

1,109,615. Setpember 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. Relates to a semi-automatic system. A primary selector switch is associated with each answering jack containing line terminal.

1,109,616. September 1, 1914. ELECTRICAL SIGNALING SYSTEM FOR TELEPHONE EXCHANGES; E. E. Clement, Washington, D. C. A composite system is described. The feature is a common code signal receiving circuit and a separate selective switching mechanism adapted to be actuated over any one of the line circuits to connect it with the code signal receiving circuit.

1,109,617. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. In this semi-automatic system, primary selector switches answer the calls and initiate connection. Line selectors and connectors complete the connection. Secondary selectors, comprising sets of digitately associated relays, bring operators' sets into connection with the circuits of the primary and line switches.

1,109,618. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to Frederick C. Stevens, Attica, N. Y. Another semi-automatic system is covered by this patent. A primary switch is provided for each trunk and is adapted to connect the trunk with a calling line. A selector switch constitutes the connecting or calling terminal of the trunk. A continuous rotated secondary selector switch is individual to each operator's answering set and controlling apparatus for making connections to the trunk.

1,109,619. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. Automatic switches are provided for joining connecting links to calling lines, and other automatic switches make the connection to the called lines. Automatic means, individual to the links, connect an operator's set to a calling line.

1,109,620. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C. A feature of this semi-automatic system is a unitary automatic pilot or selector switch common to a plurality of lines and links. It contains testing terminals for the lines and acts in response to a call over any line to automatically select the calling line, and synchronously actuate connecting means to select the line and connect it with an idle link.

1,109,621. September 1, 1914. TELEPHONIC APPARATUS; E. E. Clement, Washington, D. C. A selective switch for an automatic system is described. It comprises a bank of contacts having a frame connected to it, carrying a spindle. A movable contact or wiper is carried on the spindle. Electromagnetic actuating means for the spindle are separately assembled and mounted as a unit upon the outside of the frame with actuating parts extending within the frame so as to operatively engage the spindle.

1,109,622. September 1, 1914. TELEPHONIC APPARATUS AND SYSTEM; E. E. Clement, Washington, D. C. The feature of this invention is an impulse transmitter or sending machine. An impulse commutator produces continuous series of impulses. By means of the impulse transmitter any desired number of impulses may be selected and transmitted at will.

1,109,650. September 1, 1914. TELEPHONE EXCHANGE SYSTEM; T. G. Martin, Chicago; assigned to First Trust & Savings Bank, trustee, Chicago. Trunk apparatus for an automatic system is described in this patent. Provisions for trunking in one direction are separate and distinct for the means for trunking in another direction. They are allotted to and connected with the ends of two-way trunk lines.

Condensed News Reports

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personal.

E. K. SPENCER, president of the Pike County Telephone Co., of Petersburg, Ind., has resigned. Charles Head has been elected to succeed him.

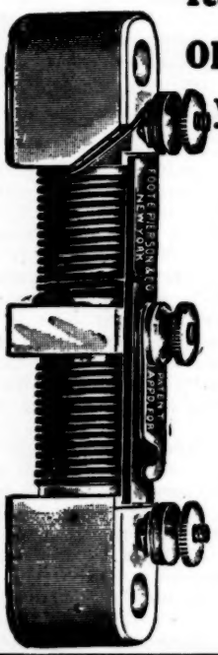
F. C. FLIPPEN, of Gloster, Miss., has been appointed manager of the local exchange of the Cumberland Telephone & Telegraph Co., succeeding Charles T. Norsworthy.

O. O. WELSHEIMER, for several years manager of the Toledo Home Telephone Co., Toledo, Ohio, has been transferred to Columbus where he will have charge of the home office of the Ohio State Telephone Co., of which the Toledo company is a part.

BERNARD WILLIAM LEAVITT, manager of the City Telephone Co., at Southern Pines, N. C., and secretary of the North Carolina Independent Telephone Association, was married on September 9, 1914, his bride being Nellie Bradford Wood. The wedding announcement is made by Mr. and Mrs. Irving L. Hardin, of Southern Pines. His many friends in the telephone field extend congratulations.

GEORGE A. FORD, of Toledo, Ohio, who for many years has been connected with the local telephone interests, has been appointed manager of the Toledo Home Telphone Co. Mr. Ford began his career as a bookkeeper for the Toledo Home Telephone Co. and has risen step by step, to his present position. While acting as manager for the Toledo district, which also includes Fostoria and Findlay, he will continue as assistant treasurer of the Ohio State Telephone Co.

ARTHUR KNEISEL, who was recently appointed assistant city telephone supervisor in Chicago, has long been identified with the Independent telephone interests. His connection with the industry began in 1900 with the switchboard installation crew of The Stromberg-Carlson Telephone Mfg. Co. on the Louisville, Ky., installation. He was wire chief for the Clarksville (Tenn.) Home Telephone Co., and later joined the engineering force of the Faller Automatic Telephone Exchange Co., being one of the first service-automatic engineers of the country. He had charge of Faller company's exhibit at the St. Louis World's Fair. Mr. Kneisel then became manager of the Eastern New York Telephone & Telegraph Co., at Hoosick Falls, N. Y. Up to last May he was connected with the engineering and patent department of the North Electric Co., and its ally, The Telephone Improvement Co. Mr. Kneisel



If lightning should make its *next* call on you--would you be *ready?*

Would it catch you unawares—napping? Would you be prepared? Do you know for a certainty that lightning cannot injure your service?

Are you well protected? You will be, if you use the **Argus Lightning Arrester.** No trouble is ever reported, where it is used, because there is no "lightning trouble."

It magnetizes and disrupts lightning.

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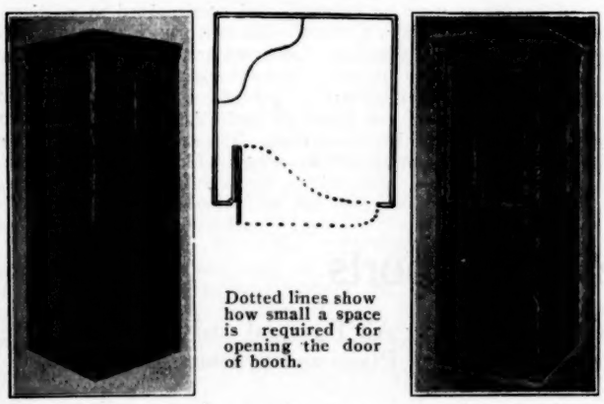

Dotted lines show how small a space is required for opening the door of booth.

The Miller Folding Door Telephone Booth

is high grade in all respects, but the big features are the Folding Door and the saving in space it effects. Just the thing for pay stations. Don't buy another booth until you have investigated the Miller.

Write for folder.

C. H. BROWNELL, Peru, Ind.

is a registered patent attorney and has many inventions in manual and semi-automatic telephony to his credit.

Obituary.

EDWARD J. HALL, "father of the long distance telephone" and a vice-president of the American Telephone & Telegraph Co., died last week at Watkins, N. Y.

J. H. C. WATTS, of Baltimore, a pioneer in telephone enterprise in the United States, died recently at the age of 73. Years ago Mr. Watts was a member of the firm of Davis & Watts, which did much in introducing the telephone in the South. He was president of the National Association of Amateur Oarsmen of the United States.

New Companies.

WALDRON, ARK.—Articles of incorporation have been filed by the Waldron Telephone & Exchange Co., of which J. S. Hill is president. The capital stock of the company is $7,500.

OAKFORD, ILL.—Articles of incorporation have been issued by the secretary of state of Illinois to the Oakford Telephone Pole & Line Co. The capital stock is $630. The incorporators are: Henry Brauer, Hardin A. Lounsbery, J. W. Lynn and John C. Shadd.

HEBRON, IND.—The Hebron Telephone Co. has been incorporated with a capital stock of $10,000. The directors are John Wilkinson, Stanley Casbere and Marquerite Casbere.

KNIGHTSTOWN, IND.—The Wilkinson Farmers Mutual Telephone Co. has been incorporated with $1,000 capital stock. The directors are as follows: Cecil Morris, J. W. Conkling and Albert Youngs.

DUTCHTOWN, MO.—The Dutchtown Telephone Co. has filed articles of incorporation. The capital stock of the new company is $2.000. The incorporators are G. E. Alt, J. F. Frazer and F. Keller.

Construction.

KEY WEST, FLA.—The Southern Bell Telephone & Telegraph Co. is planning to extend its local system and enlarge its exchange, at a cost of $10,000.

CHICAGO, ILL.—The Illinois Central Railroad Co. has appropriated $50,000 for the equipment of a telephone train dispatching system between Clinton and Centralia. The company has 3,500 miles of track controlled by telephone dispatching system.

WILMINGTON, OHIO.—The Clinton Telephone Co. has issued $50,000 worth of bonds for the purpose of erecting a new telephone exchange and office building in this city to cost about $20,000. New exchange equipment will be installed.

HAZLETON, PA.—The Consolidated Telephone Companies have approved the plan for the installation of new points at Carbondale, Olyphant and Jermyn at a cost of $39,312. A new repair shop is to be built at Hazelton at a cost of $2,600, and the exchange at Reading is to be improved.

STAUNTON, VA.—The Staunton Mutual Telephone Co. will expend approximately $67,300 in installing a common battery system.

MADISON, WIS.—The Wisconsin Telephone Co. is remodelling its building, the construction of an addition of 85 feet long having been started.

Underground.

ALBANY, ORE.—The Pacific Telephone & Telegraph Co. has appropriated $5,000 for additional plant facilities, including aerial and underground cable in the western part of Albany and additional equipment for the central office.

Financial.

COLUMBUS, OHIO.—The Ohio State Telephone Co. has declared an initial dividend on its 7 per cent. paid stock, to cover the period from July 23 to Sept. 30, 1914, payable October 1, to stock of record September 25. This amount is necessary to bring subsequent dividends into the usual quarterly divisions of the year.

COLUMBUS, OHIO.—The Ohio State Telephone Co. has filed a mortgage amounting to $23,000,000 in favor of the Bankers' Trust Co. of New York.

MILLADORE, WIS.—The Milladore Telephone Co. has increased its capital stock from $4,000 to $6,000. Charles L. Petersen is secretary and E. A. Gebert, president.

Miscellaneous.

MEROM, IND.—The Merom Telephone Co. has changed hands. Ray Redifer, manager of the Merom Electric Co., purchasing 51 per cent. of the capital stock.